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DISEASES CAUSED BY BACTERIA AND FUNGI.

I. SANARELLI, G., & ALESSANDRINI, A. (1933). Atténuation graduée, permanente et héréditaire de la bactéridie charbonneuse par la lymphe péritonéale du lapin. [**Gradual, Permanent and Inheritable Attenuation of *Bacillus anthracis* by the Peritoneal Lymph of the Rabbit**].—*Ann. Inst. Pasteur.* **51.** 40-51. [36 refs.]

II. PINOY, P. E., & FABIANI, G. (1933). Sur l'immunité anticharbonneuse expérimentale chez la Poule. [**Experimental Anti-Anthrax Immunity in the Fowl**].—*C. R. Soc. Biol. Paris.* **114.** 1321-1322. [1 ref.]

III. VERGE, J., & PLACIDI, L. (1934). La fièvre charbonneuse chez les animaux de ménagerie. [**Anthrax in Animals in Zoological Gardens**].—*Ibid.* **116.** 718-719.

I. The authors state that if a collodion sac containing sporing anthrax cultures is introduced into the peritoneal cavity of a rabbit, the virulence of the organism becomes progressively attenuated until, after a time (83 days in their experiment), the organism fails to kill either rabbits, guinea pigs or mice. They also add that this loss of virulence is fixed, permanent and maintained in culture for an indefinite period. Using these avirulent strains the authors have succeeded in immunizing rabbits, but not guinea pigs or mice.

The authors conclude with a discussion as to why animals so sensitive to anthrax are able to attenuate virulent organisms and also why rabbits ultimately succumb to intraperitoneal anthrax infection despite the bactericidal properties of peritoneal fluid.

II. The immunity against anthrax shown by normal fowls is a natural immunity and not a result of occult infection. This is confirmed by the fact that all efforts on the part of the authors to vaccinate fowls have failed.

In the course of the experiments the natural protection of injected fowls was temporarily inhibited by lowering the body temperature artificially according to Pasteur's classical method.

III. The authors record the occurrence of anthrax in two tigers, two pumas, and two lions. There was considerable variation in the evolution of the disease in the different animals ; it was very rapid in the tigers and pumas, but relatively slow in the lions. The lesions, in general, were not characteristic.

There was no splenic enlargement but there was marked oedema of the pharyngeal region.—GWILYM O. DAVIES.

HRUSKA, K. (1934). Boj proti sněti slezinné na Podkarpatské Rusi a vakcinace glukosidovou kulturou. [**The Campaign against** *B. anthracis* **Infection [Anthrax] in Sub-Carpathian Russia (Ruthenia) [Czechoslovakia, formerly Russia] and Vaccination with Glucoside Culture**].—*Zverol. Rozpravy.* **8.** 31-34 and 39-42. 2 figs. [11 refs.]

The introduction of vaccination with glucoside culture constitutes an important advance in immunization against anthrax. Of 413,893 cattle in various districts of Sub-Carpathian Russia, inoculated during the past nine years by Pasteur's or Sobernheim's method against anthrax, 1,289 (0·39 per cent.) died, while, after the use of glucoside culture, the loss was only 15 out of 34,643 cattle (0·043 per cent.).

In heavily infected districts it is advisable, in the author's opinion, to vaccinate cattle with glucoside culture twice a year, the first time in the spring and again three months later.—E. PRIBYL (BRNO).

HARNACH, R. (1933). Studie sedimentace a koagulace spor anthrakových v odpadních v odách. [**Sedimentation and Coagulation of Organic Matter in Residual Waters from Tanneries containing Spores of** *B. anthracis*].—*Klin. Spisy Skoly Zverol. Brno.* **10.** 47-78. 4 tables. [21 refs.] [French summary : abst. from orig.]

The removal of *B. anthracis* spores from water discharged from tanneries is not complete, even if the natural sedimentation process lasts for many months. Even chemicals such as arsenious oxide, tannic acid, potassium dichromate and sodium sulphate, which are used in the tanning process, do not completely coagulate in a week, organic matter in residual water containing the spores. The same result was obtained when chemical coagulants such as ferrous sulphate, ferric sulphate, ferric chloride, ferrous chloride, ferric hydroxide and ferrous hydroxide were added to the residual water. To obtain satisfactory purification of discharged residual water from the bacteriological point of view, the coagulation and sedimentation must be completed by proper filtration methods.—E. PRIBYL (BRNO).

—. (1933). **Tuberculosis [Bovine]**.—*Rep. Chief Bureau Anim. Indust. U.S.A. 1933.* pp. 2, 14-15, 18 and 37-40.

Excellent progress was made in increasing the extent of modified accredited areas under the Bureau's eradication scheme, and now 11 states come under this designation.

As in previous years, tuberculin was produced on a synthetic medium [see DORSET below] and during the year under review comparative tests were made between this tuberculin and Koch's old tuberculin, on nearly 20,000 cattle. The new tuberculin proved to be slightly more efficient than Koch's old tuberculin in detecting cases of infection, whereas the number of " no-lesion " reactors was the same for each kind of tuberculin, the percentage being 5·4 of the reactors.

A further study was made of the skin-lesion problem ; two acid-fast organisms isolated from cases caused similar lesions in test cattle, but they healed up after four months. During the presence of the skin lesions produced there was sensitivity to the tuberculin test.

Evidence was obtained that contact between cattle and tuberculous fowls can cause tuberculin sensitivity in the cattle during the time of contact. Reacting cattle in a dairy herd managed by the tuberculous patients at a sanatorium were tested for types of infection, and the avian type of *Mycobact. tuberculosis* was found. In work carried out to test the suggestion that *Br. abortus* infection causes sensitivity to tuberculin [see HOLTH. (1932). *Norsk. Vet.-tidsskr.* **44.** 169.] no confirmation was obtained.

Forty-six samples of commercial, avian and mammalian tuberculin were tested and found satisfactory.

Tuberculosis in pigs which had been fed on house garbage was studied and the avian bacillus and the human bacillus were both isolated from one case.

The report of the tuberculosis division of the Bureau shows that over thirteen million cattle were tuberculin-tested during the year, with 2 per cent. of reactors. Detailed results are given in tabular form. The division employs 197 whole-time veterinarians on this work and, in addition, 586 veterinarians are employed on the work by the various states, making a total of 783. The combined federal and state financial appropriations for compensation and operating costs amounted to thirteen million dollars.

Fifteen Bureau veterinarians were engaged in investigating tuberculosis in poultry ; the disease was found on 9,400 farms and a considerable number of swine were found to be infected with avian tuberculosis.—J. E.

I. Dorset, M. (1934). **A Comparison of Koch's Old Tuberculin with a New Synthetic-Medium Tuberculin.**—*J. Amer. Vet. Med. Ass.* **84.** 439-456. 3 figs., 5 tables.

II. Wight, A. E. (1934). **Progress and Status of Cooperative Tuberculosis Eradication Work.**—*Ibid.* 457-469.

III. Hisel, C. C. (1934). **Some Observations and Comments on Area Tuberculosis Eradication under Range Conditions.**—*Ibid.* 469-483. 1 table.

IV. —. (1934). **Report of Committee on Tuberculosis.**—*Ibid.* 483-487.

I. This is a comparative study of the results obtained in tuberculin testing of cattle with the old broth tuberculin of Koch and a synthetic-medium tuberculin.

Dorset emphasizes the proved efficiency of the broth tuberculin, the use of which has reduced the general incidence of tuberculosis in the United States to a mere fraction of its former prevalence. The broth tuberculin was not, however, 100 per cent. efficient and failures occasionally occurred.

" It is clear that the strength of any tuberculin, provided the bacteria used are the same, must primarily be dependent upon the amount of growth per 100 c.c. of culture fluid."

Comparative experiments showed that three to four times more growth can be obtained on the synthetic medium than on a glycerine-broth medium.

Analysis proved that the proteins present in the synthetic culture filtrates were derived entirely from the tubercle bacilli.

Comparative tests of broth tuberculin and synthetic tuberculin were made simultaneously on 13,288 cattle by intradermal inoculations into the subcaudal fold and vulva. 1,127 animals reacted to the broth tuberculin and 1,268 reacted to the synthetic tuberculin. The percentage of " no visible lesion " cases found at autopsy was practically the same, a little more than 5 per cent. with the broth tuberculin and a little less than 5 per cent. with the synthetic tuberculin.

141 more reactors were detected with the synthetic tuberculin than with the broth tuberculin and 135 of these were found at autopsy to be tuberculous. Details of the preparation of the synthetic medium and of the tuberculin are given.

II. Wight describes the progress made during 1933 in America in the eradication campaign against tuberculosis. The combined Federal and States monies allocated for this work during the period under review was 13 million dollars.

Thirteen million cattle were tested and 2 per cent. of reactors were found.

Among many interesting points mentioned is that all herds supplying milk to municipalities are required by ordinance to be tuberculin tested.

Some cities insist that butter and other dairy products must come from herds in the modified accredited areas [areas in which the incidence of tuberculosis in the cattle population is less than 0·5 per cent.].

In connection with the eradication of avian tuberculosis, it is suggested that there is a possible danger of the introduction of the infection through the medium of day-old chicks from tuberculous flocks.

During the period 1925 to 1933 the incidence of tuberculosis in pigs examined by federal meat inspectors decreased from 15·2 per cent. to 10·5 per cent.

III. This article refers to the regulations governing the tuberculin testing of range cattle.

IV. This paper deals with the tuberculosis regulations for the " Individual Accredited Herd Plan " and the " Modified Accredited Area Plan."

" The official test shall be the intradermic by the single injection, or the double injection of the caudal fold and vulva, or the subcutaneous, or either or both of these methods in combination with the ophthalmic."—T. M. DOYLE.

JORDAN, L. (1934). **Biennial Reviews of the Progress of Dairy Science. Section D. The Diseases of Dairy Cattle. I. Bovine Tuberculosis. II. Contagious Abortion. III. Mastitis.**—*J. Dairy Res.* **5.** 160-178. [158 refs.]

A discussion on the recent literature, chiefly from the British Empire and the United States, of these diseases.

Under the first heading, the tuberculin test, skin lesions in tuberculin-reacting cattle, avian tuberculosis in bovines and vaccination by BCG, the Spahlinger and other vaccines are discussed.

Br. abortus infection is considered under the following headings :– incidence and control, vaccination and isolation, porcine strains of *Br. abortus*, persistence of agglutinins in the blood, significance of infected bulls, treatment of abortion, methods of infection and udder infection.

In the section on mastitis, the morphology of the causal organisms, prophylaxis, treatment and control are dealt with.—J. E.

HINDERSSON, R. (1933). Förekomsten av tuberkelbakterier av human typ hos nötkreatur. **[The Occurrence of *Mycobacterium tuberculosis* Infection (Human Type) in Cattle].**—*Suomen Eläin.-lehti.* **39.** 154-162. 3 tables. [German summary : abst. from orig. in Swedish.]

The writer gives an account of his observations during several years on the tuberculin test, using both the subcutaneous and intradermal methods. He found that, at the *post-mortem* examination of many reactors, on various farms, no lesions of tuberculosis could be demonstrated. Suspensions of lymphatic glands from these animals, when injected into guinea pigs, caused tuberculosis which in culture proved to be of the human type. Medical examination of the attendants on these farms demonstrated in every case that a person attending the animal was suffering from active pulmonary tuberculosis, accompanied by coughing and expectoration. Many of these reactors reacted equally to tuberculin of either human or bovine type.

SVANBERG's investigations of types of *M. tuberculosis* in pigs showed that about 70 per cent. were affected with tuberculosis of human type.

An experimental calf was fed with *M. tuberculosis* (human type) and subsequently tested ; the animal later reacted to tuberculin ; at *post-mortem* examination no lesions were found, but *M. tuberculosis* (human type) was recovered from a guinea pig inoculated with a suspension from the lymphatic glands.

The writer is of the opinion that no person suffering from tuberculosis should be allowed to work among livestock.—A. A. FORSYTH.

SVANBERG, V. (1934). Typus gallinaceus sijojen tuberkuloottisten muutosten aiheuttajana Suomessa. [**Avian Tuberculosis in Pigs in Finland**].—*Suomen Eläin.-lehti.* **40.** 91-94. 1 fig. [German summary: abst. from orig.]

Research into the type of bacillus present in porcine tuberculosis was carried out at the State Veterinary Laboratory at Helsingfors. Out of 34 cases, 24 were caused by the human type and 10 by the bovine type. In addition, the author has observed two cases of avian infection in pigs and it is probable that this type of infection will increase in Finland owing to the great increase in poultry keeping. The author considers that avian tuberculosis in pigs may sometimes be the cause of reactions of cattle to tuberculin.—P. I. STENIUS (HELSINGFORS).

SVANBERG, V. (1934). Bakterietyperna vid tuberkulos hos svin i Finland. [**Types of** *Mycobacterium tuberculosis* **of Swine in Finland**].—*4. Nord. Vet.-mötet. Helsingfors. 1933.* pp. 813-829. 1 fig., 6 tables. [25 refs.] [German summary: abst. from orig.]

The paper opens with some general information on tuberculosis in Finland. The mortality from tuberculosis in human beings has been approximately 2 per cent. since 1920. The incidence of infection in cattle as determined by tuberculin tests has fluctuated between 3 and 7 per cent. since 1908. The few tests carried out on swine, together with abattoir returns, give the incidence of tuberculosis as well below 1 per cent.

The author advances the theory that the type of infection found in swine is a reflection on the relative incidence of human, bovine and avian tuberculosis present in the particular country, as shown by statistics from various countries. The pig can pick up each type of infection with equal facility. On the basis of this supposition it would be expected that the human type of infection in swine in Finland would be more common than the bovine type. Svanberg, therefore, carried out cultural and animal inoculation tests with tuberculous material from 60 pigs found infected on slaughter. In 34 cases a reliable result was obtained: 24 cases were of the human type of infection and 10 of the bovine type.—J. E.

WILLIS, H. S. (1933). **The Effect of Animal Passage on the Virulence of Tubercle Bacilli.**—*Amer. Rev. Tuberc.* **28.** 884-898. [29 refs.] [Copied *verbatim* from *Bull. Hyg.* **9.** 344-345. Signed by S. ROODHOUSE GLOYNE].

Numerous methods of treating the tubercle bacillus in the laboratory are supposed to be associated with changes in virulence. For instance, prolonged life on culture media may lead to reduction in virulence, *e.g.*, BCG and R.1 cultures of tubercle bacilli. Similarly long residence in the bodies of various animals that are refractory to tuberculosis has been claimed by some workers to diminish the virulence of the bacilli, whilst on the other hand passage through animals has been advocated as a method of increasing the virulence. The preliminary part of this paper reviews the literature on these points, a good deal of which is contradictory.

In 1922 the author planned a series of experiments of repeated animal passage with a strain of tubercle bacillus of low virulence in the hope of clearing up some of these contradictory statements. A strain of tubercle bacillus, R.1, of low virulence to guineapigs, was used for passage experiments for 10 years. During this prolonged period progressive disease appeared three times and in three only of about 900 animals used. Whether these were instances of extraneous contaminating tuberculosis cannot be determined. That such may be true is possible if not probable. But for these three exceptions passage has appeared to have no effect on the virulence of the strain used.

A strain of virulent tubercle bacilli was also passed through animals for more than 8 years. During 50 passages there was evidence of a slight increase of virulence. This strain when carried on media during this 8-year period lost considerably in virulence but is still fully capable in small doses of leading to the death of guineapigs.

It appears that the prolonged stay of a weakly virulent tubercle bacillus in animal tissues does not as a rule affect the virulence.

LOPATYNSKI, K. (1934). Gruzlica gruczlów chlonnych u psa i szczególna jej postać–odosobniona gruzlica gruczolów górnoszyjnych i krezkowych. **[Tuberculosis of the Lymph Glands of the Dog]**.—*Wiadom. Wet.* **13.** 321-340. 2 figs. [19 refs.] [Abst. from French summary].

The author gives a description of nine cases of tuberculosis of the lymph gland unaccompanied by lesions in other organs in dogs. In three cases the anterior cervical and mesenteric lymph glands were affected and in six cases the mesenteric glands alone.

The pathological changes are described. From the results in inoculated guinea pigs and rabbits the author concluded that the infection was due to the human type. He attempted to grow cultures, but was unsuccessful.

Six of the cases described were in dogs less than two and a half years old and, as a result of his study, the author considers that this type of infection is characteristically a disease of young dogs.—J. E.

HEDSTROEM, H. (1934). Nagra försök med BCG-Ympämne. **[Trials with BCG]**. —*4. Nord. Vet.-mötet. Helsingfors. 1933.* pp. 116-134. 4 tables. [English summary : abst. from orig.]

INNOCUITY OF BCG.—Twenty-four guinea pigs were inoculated intramuscularly with 1 to 10 mg. of BCG and were examined for evidence of tuberculosis on death or slaughter 391 days after inoculation. Only three animals showed tuberculous lesions, one of localized superficial infection, one of the spleen and one of a generalized nature.

IMMUNIZING VALUE OF BCG.—Thirty guinea pigs were vaccinated with BCG and were infected with virulent bovine tubercle bacilli four to eight weeks later and a note was made of the survival time before they died of tuberculosis. According to the results it was shown that the BCG vaccination increased the time of survival by about 100 per cent. as compared with a control group infected, but not vaccinated. Another experiment on four calves, two being controls, gave a similar result. In this case BCG was inoculated ten weeks before the infective dose.—J. E.

I. VELU, H., & ZOTTNER, G. (1934). Isolement rapide du Bacille pyogène du Porc en milieu solide. **[Rapid Isolation of *Corynebacterium pyogenes* of Swine on a Solid Medium]**.—*C. R. Soc. Biol. Paris.* **115.** 914-915. [2 refs.]

II. VERGE, J. (1934). Sur quelques caractères de *Bacillus pyogènes suis.* **[Some Properties of *Corynebacterium pyogenes suis*]**.—*Ibid.* **116.** 100-101. [3 refs.]

I. The authors state that *C. pyogenes* isolated from pigs differs from that of sheep and that it grows on solid media better anaerobically than aerobically. They describe the preparation of a medium made from Carré's broth solidified with gelatin and their method of preparing the inoculum from pus.

II. Verge states that he has successfully employed gelatin containing an extract of blood corpuscles for the keeping of strains of *C. pyogenes suis* over long periods. On this medium the organism shows signs of dissociation, with a tendency to form S colonies.—J. E.

KALIGIS, J. A., & FOOY, J. P. (1934). Septichaemia haemorrhagica in een melkveestal. **[Haemorrhagic Septicaemia in a Dairy Herd]**.—*Ned. -Indisch. Blad. Diergeneesk.* **46.** 144-149. [English and German summaries : abst. from orig.]

This is said to be the first report of haemorrhagic septicaemia in dairy cattle in the Dutch East Indies, five cases being observed in a herd of stall-fed dairy cows. The disease is, however, enzootic in village cattle and buffaloes.

Diagnosis was confirmed by animal inoculation and cultures were isolated from the test animals.—J. E.

I. KALIKIN, B. (1932). Studja doswiadczalne nad dzialaniem acidum salicylicum na Bacterium avisepticum i na inne bakterje z grupy posocznicy krwotocznej in vivo i in vitro. **[Experimental Studies on the Influence of Salicylic Acid on *Past. aviseptica* and Other Bacteria of the Pasteurella Group *in vitro* and *in vivo*]**.—*Wiadom. Wet.* **11.** 1-20. 6 tables. [8 refs.] [French summary : abst. from orig.]

II. KALIKIN, B. (1932). Szczepionki z kwasem salicylowym przeciwko cholerze drobiu. **[Salicylated Vaccines against Fowl Cholera]**.—*Ibid.* 49-56. 4 tables. [11 refs.] [French summary : abst. from orig.]

III. KALIKIN, B. (1932). Szczepionki z kwasem salicylowym przeciwko chorobom, wywolywanym przez grupe bakteryj posocznicy krwotocznej. (Bovisepticum, Vitulisepticum, Ovisepticum, Cuniculisepticum i Suisepticum). **[Salicylated Vaccines against the Diseases caused by the Bacteria of the Pasteurella Group.** (*P. boviseptica*, *P. vituliseptica*, *P. oviseptica*, *P. cuniculicida* **and** *P. suiseptica*)].—*Ibid.* 185-193. 5 tables. [13 refs.] [French summary : abst. from orig.]

I. Salicylic acid was found to be an efficient disinfectant against *P. aviseptica in vitro.* In experiments with pigeons, intramuscular injections of salicylic acid were given before, simultaneously with and after inoculating them with cultures of *P. aviseptica.* All these pigeons, however, died of infection. On the other hand, when salicylic acid was given *per os* to pigeons also infected *per os*, they survived. It is, therefore, suggested that this drug is of prophylactic and curative value against fowl cholera when given in this way.

It was found that salicylic acid (0·5 per cent.) was not lethal for *Bact. coli*, *Bact. paratyphosum*, *Pseudomonas pyocyanea*, *Erysipelothrix rhusiopathiae*, *Streptococcus metritidis*, *Str. mastitidis* or staphylococcus.

II. To 100 c.c. of a five-day-old broth culture of *P. aviseptica*, 0·25 g. salicylic acid was added and 5 c.c. of it was inoculated into pigeons. Later, at various intervals, pigeons were infected with fowl cholera by injection, by scarification and by the feeding of the pure culture. On the basis of these experiments salicylated vaccines were considered to confer immunity against fowl cholera even after vaccination with only 5 c.c.

III. To 100 c.c. of extremely virulent strains of *P. boviseptica*, *P. vituliseptica*, *P. oviseptica*, *P. cuniculicida* and *P. suiseptica*, the author added 0·125 g. of salicylic acid and called it vaccine " I." Vaccine " II " was prepared as follows :– salicylic acid was added to the broth culture, and the sediment which appeared after two to three days dissolved in 100 c.c. of physiological saline. Rabbits and sheep were immunized with vaccine " I," then with vaccine " II," followed by infection with *P. boviseptica*, *P. vituliseptica*, *P. cuniculicida*, *P. oviseptica* and *P. suiseptica :* vaccinated animals survived, whilst control animals died. Immunization of rabbits against *P. suiseptica* and *P. boviseptica*, with vaccines produced from heat-killed cultures, did not protect them against infection with these bacteria.

—K. SZCZUDLOWSKI (LWÓW).

—. (1934). **Report of Committee [U.S. Livestock Sanit. Ass.] on Bang's Disease.** —*J. Amer. Vet. Med. Ass.* **84.** 362-373.

The Committee made six recommendations on the control of contagious abortion. These concern federal interstate regulations governing the transport of cattle, the standardization of the agglutination test, rules for the designation of herds officially recognized " Bang's disease-free herds," appropriate action for the prohibiting of illegal transportation of cattle by railway trucks, the uniform marking of infected animals and the use of live cultures of low virulence for vaccination purposes. The matter in the report cannot be dealt with in an abstract.

This report was followed by a long discussion among the members present at the meeting.—J. E.

—. (1933). **Infectious Abortion.**—*Rep. Chief Bureau Anim. Indust. U.S.A. 1933.* pp. 2, 16-18 and 33.

This is a reference to the work of the Bethesda Experiment Station [COTTON, W. E.] on methods of infecting cattle with brucella.

An experiment to test the skin as a path of infection was performed on 20 cattle, 4 being infected by culture through the abraded skin and 16 through intact skin. All the former and ten of the latter acquired the disease.

The susceptibility of cattle to the porcine strain of *Br. abortus* was tested on six heifers which were placed in a small compound, together with six pigs which were artificially affected with a virulent porcine strain. Two heifers reacted to the agglutination test at a low titre for some time, but all six produced vigorous calves, indicating that the porcine strain of *Br. abortus* was of low virulence for cattle.

Two heifers and one cow were fed for three months with raw milk from cows which were excreting *Br. abortus* in their milk, but they did not become infected and did not react serologically at any time.

The effect of bovine and porcine strains of *Br. abortus* was tested on ten ewes, five being given one strain and five the other. Four ewes receiving the bovine strain lambed normally and none died, but *Br. abortus* was found in all five ewes. Of the other group, two of which lambed normally, two aborted, whilst the fifth died. *Br. abortus* was found in this fifth ewe and the latter pair only.

The lesions caused by *Br. abortus* in the vertebrae of pigs were studied and a brief description is given.—J. E.

I. PLUM, N. (1933). Kvaegkastningens Diagnostik, belyst ved laboratoriemaessig Undersøgelse af indsendt Materiale fra 1000 Kastningstilfaelde. **[Diagnosis of *Br. abortus* Infection Illustrated by Laboratory Examination of Material from 1,000 Abortions].**—*Maanedsskr. Dyrl.* **45.** 309-335. [4 refs.]

II. HOLTH, H. (1934). Oversikt over de diagnostiske undersøkelser i anledning av smittsom kastning foretatt ved Veterinaerinstitutet i 1933. **[Account of the Diagnostic Investigations on *Br. abortus* Infection Carried out by the Veterinary Institute, Oslo, in 1933].**—*Norsk Vet.-tidsskr.* **46.** 80-85. 2 tables.

I. Specimens of placenta and blood from 1,000 cows were examined. The placental material was examined for *Br. abortus*, *Mycobact. tuberculosis*, spirillae and fungi. The blood samples were examined for complement-fixing antibodies and agglutinins.

The examination of the placental material comprised :—(1) microscopic examination of smears stained with methylene blue and by the Giemsa and Ziehl-Nielsen methods ; (2) microscopic examination of material scraped from the

cotyledons and suspended in a glycerine-sodium carbonate solution ; (3) preparation of cultures in order to demonstrate possible mould fungi and (4) complement-fixation test.

Br. abortus was demonstrated in 343 cases, *M. tuberculosis* in 12 cases, spirillae in 60 cases and *Aspergillus* or *Mucor* in 13 cases. The comparative value of the diagnostic methods referred to above is given.

By means of the present method of examination used at the Serum Laboratory to diagnose contagious abortion (microscopy + agglutination test) nearly all positive cases are demonstrable.

II. In the course of the past year 10,792 blood samples from cattle have been examined at the Institute ; 13·4 per cent. of cases were positive or gave suspicious reactions for *Br. abortus* infection. On the basis of the material collected by the Institute over a number of years, which has been compared with the information obtained through the veterinary administration, it has been shown that infection has been less frequent recently.

The frequency of undulant fever in human beings is relatively high compared with the incidence of contagious abortion in cattle.

—H. C. Bendixen (Copenhagen).

I. Stewart, W. L., & Westwater, C. H. (1933). **The Eradication of Contagious Abortion. A Northumbrian Experiment.**—*Vet. J.* **89.** 536-544. 4 tables.

II. Birch, R. R. (1933). **The Nature and Economic Importance of Bang's Disease of Cattle.**—*Rep. New York State Vet. Coll. 1931-1932.* pp. 163-170. 1 table.

III. Turcu, T., & Morariu, E. (1934). L'isolement de *Brucella abortus* (Bang) d'un foyer d'avortement infectieux en Transylvanie (Roumanie). **[Isolation of *Br. abortus* in an Area affected with Contagious Abortion in Transylvania (Rumania)].**—*C. R. Soc. Biol. Paris.* **115.** 315-316. 1 table. [1 ref.]

I. The herd used for the experiment was self-contained and consisted of about 60 animals, including young stock. It had been infected with contagious abortion for 20 years. All animals over 12 months old were tested monthly by the agglutination test until all gave negative reactions. The positive reactors were isolated and sold at the earliest opportunity. The doubtful reactors were isolated until retest. Replacements were tested on the vendor's premises and then, if the reaction were negative, kept isolated for one month, when, if they still gave a negative reaction, they were put into the clean herd. The use of calving boxes, disinfection of premises, double fencing of pastures and care with the disposal of farmyard manure were general measures adopted.

For the agglutination test, water clear at 1 : 20 and some degree of agglutination at 1 : 40 were taken as positive.

The disease was eliminated in six months. After the herd was shown to be free at two tests, tests were carried out biannually and no recurrence of the disease had been met for a period of 32 months. Since the herd had been free from abortion, cases of retained placenta, vaginitis and sterility, formerly common, have been absent.

II. The author emphasizes that, in an animal infected with *Br. abortus*, the infection is generalized, the organism being demonstrable in the genital tract, udder, lymph glands, spleen, bones and joints and in the testicles of the male.

Pregnant animals exposed to infection fall into the following groups :—(1) those which show a temporary low reaction, do not become spreaders and whose breeding life is not impaired. Very few fall within this category ; (2) those which develop

a high reaction, abort often and are spreaders ; later they overcome the infection, the reaction fades out and they are subsequently immune. Very few fall within this category ; (3) those which develop a high reaction that persists, are potential spreaders throughout life, though periods during which they do not spread infection may occur. They develop a tolerance to the infection which enables them to carry their calves to full term, but sterility often supervenes. A very high percentage of infected animals belong to this class ; (4) those which give a high reaction and become active spreaders ; they abort repeatedly and are rendered sterile, or otherwise worthless, very early. A rather high percentage is included in this group.

Most cows react to the agglutination test in three to eight weeks after being fed with cultures of *Br. abortus*. Calves fed on infected milk should not be added to a clean herd until at least one month after this feeding has ceased.

III. The authors record the isolation of *Br. abortus* from the amniotic fluid of a cow affected during an outbreak of contagious abortion in Transylvania (Rumania) and compare their strain with other strains of *Br. abortus*.

—A. Brownlee.

I. Zeller, H., & Beller, K. (1933). Infektionsversuche mit Brucella-Stämmen bei Jungbullen. [**Infection Experiments with** *Br. abortus* **in Young Bulls**]. —*Münch. tierärztl. Wschr.* **84.** 554-556. 4 tables, 1 chart.

II. Bang, O., Bendixen, H. C., & Orskov, J. (1933). Ruft Brucella Abortus Bang eine universelle Infektion beim Rinde hervor ; und sind das Symptom Verwerfen und die latente Euterinfektionen nur Ausdruck für eine geringe Fähigkeit der trächtigen Gebärmutter und der Milchdrüsen, sich von der Infektion zu befreien ? [**Does** *Br. abortus* **cause a General Infection in Cattle ?**]—*Acta path. et microbiol. scand.* Suppl. 16. 7-17. 1 table.

I. From experiments on eight bulls, aged about one and a half years, from *abortus*-free herds, which were given a mixture of five old or recently isolated strains of *Br. melitensis* or of *Br. abortus* (including strains from bovines and man), the following conclusions are drawn. Subcutaneous inoculation is followed by a rise of temperature 18 to 21 days after infection and by production of agglutinins. Feeding is much less effective. A second infection is followed by a much quicker and sharper rise of temperature and of agglutinins. Brucella were obtained through guinea pigs from blood between the 10th and 21st day, and from urine between the 10th and 37th day. They were never obtained from semen or from the generative organs after slaughter. Impotence and wasting occurred in one case, which also showed arthritis and tendonitis.

II. Eight virgin heifers were each fed with a large dose (100 c.c. of a suspension containing 20 milliards per c.c.) of a freshly isolated virulent strain of *Br. abortus*, given in three doses within a period of three hours. They were killed after six to 90 days and material from the various organs was examined culturally on liver agar and serum agar, the latter usually giving a significantly greater number of colonies.

Whilst recognizing the insufficiency of the number of experimental animals, the authors take the view that oral infection with brucella follows the same course as that in diseases such as tuberculosis and typhoid.

The lymph glands of the alimentary canal are first infected. Generalization follows and reaches its height at three to four weeks. During the succeeding weeks the general infection declines, the udder and spleen being the organs in which it usually persists. Agglutinins were found after 17 days, but it is important to note that in one animal they had practically disappeared three months after infection, although brucella were grown from the udder and from a lymph gland.

—A. W. Stableforth.

—. (1933). France. Conférence des Services vétérinaires sur la mélitococcie. [**France. Conference of Veterinary Services on Brucella Infection**].—*Bull. Off. internat. Epiz.* **7.** 443-446. 1 table.

At this conference, answers to a questionnaire which had been previously issued were considered. It was seen that, in certain communes of France, brucella infection was extremely prevalent in sheep and goats, less so in cattle, and that in the last few years 432 cases of undulant fever of ovine and caprine origin and 57 cases of bovine origin had been recorded in human beings. The conference considered the necessity for strengthening the police regulations and for the creation of co-operative dairies for the pasteurization of goat and ewe milk before it is used for cheese making. It was also suggested that disinfectants should be supplied free of charge to farmers who experienced an outbreak of the disease. [Except as a part of a control régime, the use of disinfectant can be of little value]. In conclusion, a notice was issued to affected communes stating the dangers of the disease and the procedure to be adopted when abortion occurs in the flocks.

—J. A. Nicholson.

Taylor, R. M., Vidal, L. F., & Roman, G. (1934). Persistance de *Brucella melitensis* (variété caprine), chez les vaches naturellement infectées. [**Persistence of *Br. melitensis* (Caprine Variety) in Naturally Infected Cows**].—*C. R. Soc. Biol. Paris.* **116.** 132-134. [1 ref.]

The authors carried out bacteriological tests on the milk of ten cows 12 to 18 months after *Br. melitensis* had been isolated from them and were again able to isolate it from six of these animals. They state that *Br. melitensis* is not rare in cattle in France and that such cases always coexist in connection with human infection.—J. E.

Steyrer, A. (1934). Ueber Febris undulans bovina Bang in Tirol. [**Undulant Fever in the Tyrol**].—*Münch. med. Wschr.* **81.** 277-280. 3 charts. [Copied *verbatim* from *Bull. Hyg.* **9.** 394. Signed by G. S. Wilson].

During the years 1929 to 1933 a total of 16,035 sera from cattle in the Tyrol were examined ; 5,232 (33 per cent.) agglutinated *Br. abortus* to a significant titre. In the period 1930 to 1933 at the Hygienic Institute at Innsbruck 76 human sera were found to agglutinate this organism to a titre of between 1/160 and 1/1,280. The total number of cases of undulant fever in the Tyrol is unknown, since the disease is not notifiable. Only four of these so far studied occurred in persons engaged in agriculture. With the exception of three veterinarians all the patients appear to have been infected by the mouth (presumably milk).

I. Dobberstein, J., & Piening, C. (1933). Beiträge zur Pathologie des Zentralnervensystems bei Tieren. I. Botulismus bei Schwänen. [**Pathology of the Central Nervous System of Animals. I. Botulism in Swans**].—*Berl. tierärztl. Wschr.* **49.** 549-552. 4 figs. [19 refs.]

II. Gunnison, J. B. (1934). **Studies on the Antigenic Substances of Clostridium parabotulinum. II.**—*J. Immunol.* **26.** 17-24. 1 table. [10 refs.]

III. Tani, S. (1934). **Studies on Botulinum Toxin. (First Report). (Second Report). On the Toxin Produced in Biuret-Free Media and its Characteristics.**—*Jap. J. Exp. Med.* **12.** 9-31 and 33-47. 26 tables. [44 refs.] [Orig. in English].

I. Heavy losses amongst swans from a condition characterized by lameness and opisthotonos resulted in the isolation, after careful examination, of a member of the clostridium group from the livers and spleens of two and from the alimentary

tract of three swans. The chief histological changes were found in the brain. Macroscopically, this organ showed multiple haemorrhages scattered throughout. Microscopically, areas of haemorrhage were surrounded by zones of necrosis, there being degenerative changes in the ganglion cells and fatty degeneration of the capillary endothelials. Nodular proliferation of glial tissue also occurred.

II. Extracts of *Clostridium botulinum*, prepared by alternate freezing and thawing of young washed cultures, reacted specifically, in the precipitin test, with corresponding antisera. They were not, however, antigenic, although such extracts contained both protein and carbohydrate, except in the case of an extract prepared from an old strain of *Cl. botulinum* which had lost its power of producing toxin.

III. *Botulinum* toxin can be purified by the method of HOSOYA and MIYATA [(1928). *C. R. Soc. Biol. Paris.* **99.** 772 and 1297]. Further purification can be attained by adsorption on to kaolin at an acid pH, and treatment with ammonium hydrogen phosphate followed by elution in an alkali medium. The final product is negative to the sulfosalycylic, Heller's, biuret, Million's, xanthoproteic, Hopkin's and Cole's, diazo and lead sulphide reactions. Antitoxin prepared by the injection of anatoxin derived from toxin so completely purified has only slight protective value.

Experiments showed that, whereas, after intravenous inoculation, *botulinum* toxin was very rapidly stored by the liver, spleen and kidney, it is only stored by the central nervous system in barely detectable quantities.

By hydrolysis of Witte's peptone with sulphuric acid and subsequent neutralization with barium hydroxide, a suitable medium negative to the biuret test and positive to Million's, the xanthoproteic, lead sulphide, diazo, ninhydrin, and Molisch's tests can be prepared. *Cl. botulinum* proliferates rapidly and produces potent toxin in this medium.—E. J. PULLINGER.

I. BRUNER, D. W. (1933). **Differentiation Between Gram-Positive and Gram-Negative Microörganisms by the Use of Enzymes.**—*J. Bact.* **26.** 361-371. 5 tables. [9 refs.]

II. ALEXANDER, J. (1933). **The Effects of Media on Bacterial Filterability.**—*Science.* **77.** 449-450. [9 refs.]

I. The addition of a glycerol extract of pancreas to a basal medium, consisting of 0·1 per cent. sodium carbonate, 0·2 per cent. potassium acid phosphate, 0·2 per cent. urea and 2·0 per cent. of agar in distilled water, produced a selective medium, which supported the growth of Gram-positive organisms, but inhibited Gram-negative organisms. Experimental evidence indicated that the enzyme trypsin exerted a lytic action upon the Gram-negative bacteria.

II. It is pointed out that the passage of bacteria [or any minute particles] through microfilters may be influenced by the constitution of the medium in which they are suspended. Different samples of media, if subjected to the colloidal gold reaction, exhibit wide differences in gold number ; this index often parallels the protective and deflocculative action of the medium on suspended particles, as well as its ability to aid the passages of particles through filters.—E. J. PULLINGER.

I. RIEDMÜLLER, L. (1933). Ein einfaches Züchtungsverfahren für die Gasbranddiagnostik. [**Culture Method for Gas Gangrene Diagnosis**].—*Deuts. tierärztl. Wschr.* **41.** 609-610. [12 refs.]

II. WILSDON, A. J. (1933). **The Relationship of "*Bacillus Ovitoxicus*" (Bennetts) to the *Clostridium welchii* Group.**—*3rd Rep. Direct. Inst. Anim. Path. Univ. Cambridge. 1932-1933.* pp. 46-51, 5 tables. [4 refs.]

III. MIESSNER, H., & SCHOOP, G. (1934). Die Isländische Bradapest im vergleich mit Deutschen Bradsot. **[Comparison of the Iceland and German Bradsot (Braxy)].**—*Acta path. et microbiol. scand.* Suppl. 18. 165-180. 6 figs. on 3 plates, 4 tables. [17 refs.]

I. A rapid method for culturing organisms of the gas gangrene group is described. Those interested are referred to the original. The principle is to inoculate a sterile glass cover slip with suspected material which has been treated by heat to destroy non-sporulating organisms. A few drops of cysteine agar (the composition of which is described) are poured over the cover slip and allowed to set. The preparation is then incubated. Colonies begin to develop within five to six hours and it is claimed that, by studying the colony growth under a low magnification of the microscope, members of the clostridium group may be recognized within 12 hours.

II. The toxin of "*Bacillus ovitoxicus*" was compared with those of the various types of *Cl. welchii*. Toxins were prepared as described by Wilsdon [this *Bull.* **3.** 127]. From cross-immunization tests it was shown that "*B. ovitoxicus*" is identical with *Cl. welchii* type D.

III. From the examination of 13 cases of Iceland bradsot [braxy] it was concluded that the characteristic lesion is haemorrhagic inflammation of the abomasum. Putrefactive changes rapidly cloak the true histopathological picture. The clostridium isolated did not appear to be identical with "*B. gigas*" the recognized cause of braxy in Germany, but the organism was not compared with the recognized types A, B, C and D of *Cl. welchii*. The Iceland type of disease differs from the German in that it attacks mainly young lambs and produces no liver foci.—E. J. PULLINGER.

SCHOFIELD, F. W. (1934). **Bovine Hemoglobinuria associated with an Intestinal Infection caused by the** *Cl. welchii*.—*Rep. Ontario Vet. Coll. 1933.* pp. 42-61. [9 refs.]

This disease is widespread in Ontario and, although not the cause of high mortality, is serious as it results in loss in production. It affects cows at pasture, particularly newly-calved cows, and the incidence is higher in spring and autumn than in the summer.

Of all the redwaters described in veterinary literature, this type, which is a true haemoglobinuria, resembles none very closely, but appears to be caused by an anaerobe of *Cl. welchii* type, as is also the case with bacillary ictero-haemoglobinuria of Nevada [this *Bull.* **1.** 148].

SYMPTOMS.—At first red-coloured urine is noticed which is accompanied sooner or later by diarrhoea followed after a time by constipation. The pulse rate is accelerated to 60 or 70 a minute and in well-developed cases the heart-beat is extremely hard and loud. This stage is reached in three to four days. As the loss of blood continues signs of anaemia are observable. The less severely affected cases recover without treatment.

POST-MORTEM APPEARANCES.—The liver is pale and friable and shows histological evidence of necrosis beginning around the central veins. The gall-bladder is distended and contains dark brown bile. The kidneys are swollen, dirty brown in colour and show haemorrhages and cloudy swelling. The small intestine is reddened when viewed externally, but appears more or less normal when opened up: histologically the epithelium is degenerated and large bacilli are to be found invading the submucosa. The blood picture is characteristic of haemolytic anaemia.

BACTERIOLOGY.—Material from five cases examined yielded an organism very

similar to *Cl. welchii* [type was not determined]. It produces a powerful haemotoxin after incubation in broth for about 18 hours. In fatal cases the organism was isolated regularly from the liver, gall-bladder and intestine, but not from the kidney, bladder or blood. It was isolated repeatedly from the faeces of natural and experimental cases and the author believes that it is a normal intestinal saprophyte, which multiplies considerably on the occurrence of any debilitating factor, the disease being produced by means of its toxin. Contributory causes include parturition and the feeding of cold or frozen roots, kale, or rape.

Experimental work on cows confirmed this supposition.—J. E.

BEAVER, D. C., & THOMPSON, L. (1933). **Actinobacillosis of Man. Report of a Fatal Case.**—*Amer. J. Path.* **9.** 603-622. 5 figs. on 1 plate. [11 refs.] [Copied *verbatim* from *Bull. Hyg.* **9.** 326-327. Signed by R. LOVELL].

Reference is made to two previous cases of human infection with *Actinobacillus lignieresi*, the causal organism of actinobacillosis of cattle, a disease similar to and frequently diagnosed as actinomycosis. Both patients recovered.

The present fatal case occurred in a man who apparently had had no previous contact with cattle and no account could be given of the source of infection. Pathological details are given, the lesions being chiefly granulomatous abscesses of the lungs, liver and spleen. An organism somewhat similar to *A. lignieresi* was isolated from the blood 24 hours before death and from the blood, spleen, liver and lungs after death. Granulomatous abscesses were produced in rabbits, guineapigs and mice by injection of suspensions of the organism.

The isolated organism revealed minor cultural differences and a somewhat different antigenic structure from bovine strains of *Actinobacillus lignieresi*, but the authors consider it to be a variant of that species. They support the view [Thompson, *J. Bacteriology*, 1933, v. 25, 44-5] of the relationship between *Actinobacillus lignieresi* of bovine and human origin, and *Pfeifferella mallei* and *Pfeifferella whitmori* and consider they should be included in one genus.

A plea for the investigation of similar types of bacteria which are frequently isolated, is made.

DISEASES CAUSED BY PROTOZOAN PARASITES.

HINDLE, E. (1934). **The Viability of Spirochaetes dried** *in Vacuo*. **[Correspondence].**—*Nature.* **133.** 381-382. [Copied *verbatim* from *Trop. Dis. Bull.* **31.** 512-513. Signed E. H.]

The author finds that it is possible to dry spirochaetes without destroying their vitality if the organisms are previously cooled to −10°C., and then dried *in vacuo* whilst in the frozen state.

Five strains of spirochaetes were tested : two culture strains of *Spirochaeta pallida*, and three strains of water leptospira. All these were found to have retained their vitality after 15 days drying *in vacuo*, and there seems no reason to doubt that they will remain alive for much longer periods. This method, therefore, should be of value for the maintenance of strains of spirochaetes in the laboratory as it reduces the necessity for repeated subculturing.

DISEASES CAUSED BY VIRUSES.

—. (1933). **Hog-Cholera Investigations.**—*Rep.Chief Bureau Anim. Indust. U.S.A. 1933.* pp. 12-14, 21-22 and 41.

Nearly 92,000 c.c. of antiserum and 43,000 c.c. of virus were produced at the Bureau's farm at Ames, Iowa. Research work on the potency of antiserum showed that it tends to fall with an increase in the volume of blood taken from hyperimmunized pigs. It is, therefore, intended to retain the practice of taking only 5 c.c. of blood per lb. body weight from serum donors. Experimental work also indicated that it was unwise to reduce the dose of virus used to hyperimmunize pigs and the dose will remain at 5 c.c. per lb. body weight.

Experiments to determine the duration of persistence of virus in the lymph glands of pigs immunized by the simultaneous method showed that it was still present at three weeks, but absent six weeks after inoculation. The comparative value of ordinary virus (in whole defibrinated blood) and " clear virus " [preparation not given] for immunization by the simultaneous method was studied on 233 pigs and both types of virus appeared to be equally efficacious.

In swine fever there is usually a leucopenia, but some cases show a leucocytosis : it is believed that the latter indicates a mixed infection.

The Bureau's Division of Hog Cholera Control employs 32 veterinarians under the supervision of Dr. U. G. Houck. Their activities are reported ; 4,358 outbreaks were notified during the year (2,000 less than in 1932).—J. E.

I. Gräub, E. (1932). Die Impfungen gegen die Schweinepest. [**Inoculations against Swine Fever**].—*Schweiz. Arch. Tierhlk.* **74.** 574-589. [30 refs.]

II. Beller, K. (1933). Zur Frage des Vorkommens von Virusträgern und Virus-ausscheidern bei der experimentellen Schweinepest. [**The Occurrence of Virus Carriers and Virus Excretors in Experimental Swine Fever**].—*Zlb. Bakt. I. (Ref.).* **108.** 334-336.

I. This is a discussion on the principles and practice of immunizing pigs against swine fever ; it refers to the appropriate methods for animals already infected and those in danger of infection.

II. The author holds the view that, under experimental conditions at least, swine fever virus carriers and excretors exist and that pigs receiving a slight infection do not develop an immunity, but pass into an allergic state. Newly-immunized pigs ought to be quarantined for some time.—E. Breusch (Leipzig).

—. (1934). Přehled dosavadních výsledků, dosazených s ockováním formolovanou vakcinou moru vepřů v ČSR. [**Survey of the Results so far Obtained from Inoculation with Formol Vaccine for Swine Fever in the Czechoslovakian Republic**].—*Zverol. Obzor.* **27.** 134-138.

On the advice of the Ministry of Agriculture, Czechoslovakia, vaccination with formolized virus has been used on a large scale in the campaign against swine fever. As far as the results obtained in the year 1933 are known, 6,691 pigs were inoculated with formolized vaccine prepared according to Terakada's method. Of these, 492 pigs developed swine fever ; 41 recovered and 451 were slaughtered. The loss from inoculation was 6·7 per cent. The immunity after vaccination is high, of long duration and sufficient to protect the pigs against infection with swine fever arising from different sources.—E. Pribyl (Brno).

I. Lignières, J. (1933). Recherches expérimentales sur la durée de l'immunité après la vaccination contre la fièvre aphteuse. [**Experiments on the Duration of the Immunity after Vaccination against Foot and Mouth Disease**].—*C. R. Soc. Biol. Paris.* **112.** 454-456. [1 ref.]

II. Lignières, J. (1933). Sur les causes des accidents de vaccination qu'on peut observer au cours de la vaccination antiaphteuse. [**The Causes of**

Accidents Noted in the Course of Foot and Mouth Disease Vaccination].—*Ibid.* 457-459. [2 refs.]

I. Two groups of four guinea pigs and two groups of eight were used for this experiment, using virus type " O," a mixture of types " O " and " A " and a mixture of several strains of types " O " and " A," with the necessary controls.

These 24 guinea pigs in four groups were vaccinated by the author's method using one serum or a mixture of four, from different sources, types " O " and " A."

The immunity was proved to be active for a period of nine months. [Comment should be made upon the very small number of guinea pigs used for these experiments].

II. The author refers to the usual means which would naturally cause loss of efficiency of a serum, such as too small a dose or an insufficiently active serum, etc. Mention is also made of the action of a temperature below 0°C. as a cause of accidents in vaccination against foot and mouth disease.

The author explains that his method of vaccination should not be used in winter when the temperature is about 0°C.—NORMAN DOBSON.

ŠOBRA, K. (1933). Diagnosa anemie koně z krevního nálezu. [**Diagnosis of Equine Pernicious Anaemia by the Blood Picture**].—*Klin. Spisy Skoly Zverol. Brno.* **10.** 79-156. 2 figs., 1 plate, 13 tables. [67 refs.] [German summary : abst. from orig.]

Characteristic changes in the blood of horses affected with equine pernicious anaemia occur in the number and quality of red blood corpuscles, the velocity of sedimentation and the reaction to the guttadiaphot test. The number of red corpuscles decreases, this being accompanied by a decrease of the haemoglobin index ; anisocytosis of red corpuscles occurs occasionally. The guttadiaphot test depends on the colour behaviour of drops of blood placed upon special shaded strips of blotting paper [this *Bull.* **4.** 398].—E. PRIBYL (BRNO).

I. LEASURE, E. E. (1934). **Equine Encephalomyelitis in Kansas.**—*North Amer. Vet.* **15.** No. 6. 16-21. 4 figs.

II. RECORDS, E., & VAWTER, L. R. (1934). **Equine Encephalomyelitis Cross-Immunity in Horses between Western and Eastern Strains of Virus.**—*J. Amer. Vet. Med. Ass.* **85.** 89-95. 1 table. [6 refs.]

I. This paper gives an account of the disease in Kansas in 1932 and 1933. The mortality in 1932 was about 17 per cent., according to one observer, whilst in 1933 it was 63 per cent. in the cases seen by the author. Two types of syndrome were seen, " the sleepy or encephalic and the walking, or spinal ataxic " ; these are illustrated by photographs. The *post-mortem* changes were all slight and are given in tabular form. Antiserum was used extensively as a prophylactic in 1933, but no accurate records of its value were obtainable.

II. Eight horses were hyperimmunized against a western strain of equine encephalomyelitis virus and, together with three controls, were then infected with an eastern strain from Delaware. Six of the immunized horses were resistant ; the other two and all the controls succumbed to encephalomyelitis.

The authors conclude that the eastern and western viruses are identical, although the former is more virulent, as demonstrated by the course of the experimental infection.—J. E.

I. HUPBAUER, A. (1933). Ueber eine in Jugoslawien beobachtete seuchenhafte Gehirnrückenmarksentzündung. [**Contagious Equine Encephalomyelitis**

in Yugoslavia].—*Wien. tierärztl. Mschr.* **20.** 673-684. 2 figs., 2 tables. [26 refs.]

II. HUPBAUER, A. (1933). Prilog k poznavanju enzootičkog meningo-encephalomyelitisa kod konja. [**Equine Epizootic Meningo-Encephalomyelitis**].—*Vet. Arhiv.* **3.** 522-528 and 529-542. 5 figs., 4 tables. [26 refs.] [Abst. from German summary].

I. This paper describes a disease of young foals in a stud at Karagjorgjevo characterized by symptoms of encephalitis and running a peracute, acute or subacute course with a high mortality. As a result of bacteriological and animal inoculation investigations, the author is of the opinion that it is a virus disease, but it appeared to differ from Borna disease, as Joest-Degen inclusion bodies were not present. Experimental infection was induced by the inoculation of brain substance filtrate intracerebrally into rabbits and one foal.

The disease was also transmitted to rabbits by feeding with food mixture used for the foals at the stud. The mixture contained soya bean and when this was removed the disease among the foals ceased, suggesting some close aetiological significance of the soya.

The details of the investigation are given in the original.

II. This is a longer paper, but essentially the same as I.—J. E.

HLAVATY, A. (1933). Enzootie mozkomíchové obrny u koní. [**Encephalomyelitis in Horses**].—*Voj. zdrav. listy.* **9.** 6-16. [Abst. from abst. in *Rev. vét. slav.* **1.** 173-174].

The author gives an account of an outbreak of an affection of the nervous system in army horses in Czechoslovakia. As a result of his investigation he believes this disease to be identical with the encephalomyelitis described by MOUSSU and MARCHAND [(1924). *Rec. Méd. vét.* **100.** 1].—J. E.

I. BRAGA, A., & FARIA, A. (1932). Paralysia bulbar infectuosa (Pseudoraiva, "Peste de coçar," Doenca de Aujesky). Primeira nota. [**Aujeszky's Disease (Infectious Bulbar Paralysis, Pseudorabies, Mad Itch). 1st Note**].—*Rev. zootec. e Vet. Rio de Janeiro.* **18.** 149-178. 5 figs. on 4 plates. [13 refs.] [French summary : abst. from orig.]

II. BRAGA, A., & FARIA, A. (1934). Paralysia Bulbar Infectuosa. Sumario. [**Aujeszky's Disease (Infectious Bulbar Paralysis). 2nd Note**].—*Inst. Vital Brazil. Bol.* No. 16. pp. 39. 15 microphotographs, 6 photographs. [21 refs.] [English summary : abst. from orig.]

I. This is a preliminary report of research work carried out and need not be abstracted separately, as the results are given in detail in the second paper.

II. This is a summary of the authors' experiments and observations since December, 1931.

Field observations yield convincing evidence that under natural conditions the disease is confined to bovines. Attempts to set up the disease in nine horses by subdural, intramuscular, subcutaneous and intradermal inoculation of virus were unsuccessful. Eight out of ten inoculated bovines developed typical symptoms, but only one of these became infected after one inoculation ; some of the others withstood the inoculation as many as four times and eventually succumbed. Fatal results occurred within 36 hours of the appearance of symptoms in bovines, dogs, rabbits, guinea pigs and mice. In swine the symptoms continued for a week and 80 per cent. of the inoculated animals recovered. It was not possible to infect birds or reptiles. Rabbits and guinea pigs are suitable experimental animals, but artificial infection is not invariably successful in them. This does not appear to

be due to any natural immunity as the same animals may subsequently be found to be susceptible. The incubation period after artificial infection varies from two days in guinea pigs to eight days in bovines.

The outstanding symptoms are nervous trembling leading to paralysis and an intense pruritus (at the seat of inoculation in experimentally infected animals) which causes the animal to bite or, in the case of cattle, even to horn the lesion. The virus was easily demonstrated in the tissues of the foetus *in utero* in an affected animal. The ease with which the virus can be found in the blood stream is a major point of differentiation from rabies.

The virus did not survive for more than 92 days in 50 per cent. glycerine at temperatures of 5° to 8°C. It was not inactivated by 0·3 per cent. of phenol in 40 days and it withstood desiccation for 65 days.

The authors have failed to transmit the disease in dogs and mice by cohabitation. In the case of mice the affected animals were frequently observed to bite the healthy ones. No virus could be demonstrated in urine or saliva from affected animals. Artificial infection could be set up with filtrates through Berkefeld filters 11, 12, 14 and 15, but not with those through Chamberland B or F.

Attempts to produce active immunity in dogs, rabbits, guinea pigs and swine with phenolized and desiccated virus, with ascending doses of untreated virus and by intradermal inoculation of virus were unsuccessful. Sera from horses which had been inoculated with large quantities of virus over a long period did not afford any passive immunity, but some encouragement was obtained from the use of sera from recovered pigs which had received further large inoculations of virus. Methylacridine, trypaflavine and urotropine had no effect upon the course of the disease. No cross-immunity between true rabies and Aujeszky's disease could be demonstrated. Eight dogs immunized against rabies were successfully infected with Aujeszky's disease and five equines which had received large quantities of Aujeszky's disease virus were successfully infected with rabies. From these results and from somewhat indefinite observations on the epizootiology of Aujeszky's disease the authors conclude that there is no cross-immunity. [The authors' results do not justify this conclusion. They have shown that animals immune to rabies are still susceptible to Aujeszky's disease, but the animals which were inoculated with Aujeszky's disease virus and were subsequently found to be susceptible to rabies had not been shown to be immune to Aujeszky's disease, as in another part of this work they failed to demonstrate any active immunity to that disease. They further state that an animal may succumb to Aujeszky's disease at the fourth or fifth inoculation of virus. There is a complete absence of proof that the inoculation of equines with Aujeszky's disease virus leads to any immunological reaction].

The pathology of the disease resolves itself into a description of secondary traumatic changes at the seat of inoculation, which extend with the pruritus along the courses of nerves and lymphatics. Changes of an inflammatory nature in the central nervous system are described.—R. S. Roberts.

I. Shortt, H. E., & Brooks, A. G. (1934). **Photodynamic Action of Methylene Blue on Fixed Rabies Virus.**—*Ind. J. Med. Res.* **21.** 581-585. 1 table. [3 refs.]

II. Shortt, H. E., & Lahiri, B. N. (1934). **Morphological Studies on Rabies. Part I. The Salivary Glands.**—*Ibid.* 587-604. 23 figs. on 2 plates. [5 refs.]

III. Shortt, H. E., Malone, R. H., Craighead, A. C., & McGuire, J. P. (1934). **An Investigation into the Relative Immunizing Value of the Kasauli and Paris Strains of Rabies Fixed Virus.**—*Ind. Med. Res. Mem.* No. 28. pp. 78. 33 tables, 1 appendix. [2 refs.]

I. A 1 per cent. suspension of infected sheep brain, centrifuged to throw down only the gross particles, was used. This was mixed in equal quantities with varying concentrations of methylene blue to give final dilutions of 1 : 10,000, 1 : 20,000 and 1 : 200,000. Exposure to light for about ten minutes seemed the critical period for a lethal effect on the virus under the conditions of the experiments. A 1 : 20,000 dilution appeared rather more lethal than the 1 : 10,000, the lower dilution possibly having a shielding effect.

The presence of homologous cells did not, in the case of this virus, appear appreciably to protect the virus.

II. The salivary glands of a large number of dogs experimentally infected with rabies and destroyed at different stages in the disease were examined microscopically, together with a lesser amount of material from infected monkeys and human beings. Details of the various structures met with are given, and interpretation of the appearances observed was controlled by examination of normal glands under varying conditions of activity. The authors concluded that most of the characteristic changes found in the salivary glands of rabid animals result from the hyperstimulation of these glands and are not necessarily due specifically to rabies virus.

Specific inclusion bodies were not demonstrated. Although bodies resembling ectromelia inclusions were found in some dogs, the authors showed similar bodies in dogs treated with pilocarpine.

III. Attempts were made to improve the vaccine used for rabies immunization. The authors found that better results were obtained by the use of a vaccine containing more brain substance than was employed formerly. The next problem was to get the best immunizing strain. Seven strains were tested and the Kasauli and Paris strains were found to lead to the best immunity.

The vaccine was a 5 per cent. suspension of sheep brain with 0·6 per cent. phenol added.

Previous to 1926, the weaker vaccine (2 per cent.) was made from rabbit brain. Since 1926, all vaccines used in Kasauli have been made from sheep brain. The method of grinding is to put the material in glass bottles along with glass beads and shake by hand. This gives a finer suspension of brain than that obtained by grinding in a mortar.—A. Brownlee.

Romanski, S. (1934). Rozstrzen woreczka zólciowego, jako nowy szczegól sekcyjny przy wscieklizniе psów. [**Dilatation of the Gall-Bladder as a New Observation in Canine Rabies**].—*Przeglad Wet.* **47.** 59-63. 1 fig. [14 refs.] [Abst. from German summary].

The author observed considerable dilatation of the gall-bladder in two dogs which had died of rabies. He suggests that this abnormality may be of importance in the diagnosis of rabies.—J. E.

Jonnesco, D. (1934). Diagnostic de la rage au moyen de l'inoculation intracaudale chez la souris. [**Diagnosis of Rabies by Intracaudal Inoculation in the Mouse**].—*C. R. Soc. Biol. Paris.* **116.** 545-548. 1 chart. [4 refs.]

The author performed comparative diagnostic tests with brain tissue from several animals suspected of rabies, by simultaneously inoculating one rabbit subdurally and a pair of white mice intracaudally with brain suspension from each case. The latter test gave quicker results and the author recommends it for general use. In positive cases the white mice became paralysed within four weeks.—J. E.

HINDERSSON, R. (1934). Skyddsympningens betydelse i kampen mot rabies. **[Immunization against Rabies]**.—*4. Nord. Vet.-mötet. Helsingfors. 1933.* pp. 323-343. 4 figs. [23 refs.] [German summary : abst. from orig.]

This is an account of rabies in dogs in Finland from 1911 onwards and of prophylactic measures employed to control this disease. It is said to have come into the country in 1929 from Russia, over the southern part of the frontier but there is no information concerning earlier occurrences. The infected province was apportioned into zones parallel to the frontier and an extensive vaccination scheme was carried out, so that between 1929 and 1932 the great majority of the dogs were vaccinated – nearly 3,000 in all. Schnürer's carbonized fixed virus for administration in a single dose was used throughout and no losses following vaccination were recorded. The author considers that immunity was acquired two months after vaccination and probably lasted for about one year, but no records of this were available.—J. E.

LABEDZ, M. (1934). Szczepienia ochronne i ochronnolecznicze przeciw wsciekliznie u psów. **[Preventive and Curative Antirabic Vaccination in the Dog]**.—*Wiadom. Wet.* **13.** 129-150. 2 tables. [61 refs.] [Abst. from French summary].

This is a review of the vaccination methods against rabies and an account of the author's work. He is an advocate of the use of large doses of glycerinized brain suspension for the curative treatment of bitten dogs. He gives a course of eight injections each containing 2 to 8 g. of the brain substance in suspension.—J. E.

SCHÖNFELD, W. (1934). Berufliche Hauterkrankungen in landwirtschaftlichen Betrieben Pommerns unter besonderer Berücksichtigung der Kuhpocken und eines daran sich anschliessenden Todesfalles. **[Occupational Skin Diseases in Pommeranian Land-Workers with Special Reference to Cowpox]**.—*Med. Klin.* **30.** 8-12. 3 figs. [Copied *verbatim* from *Bull. Hyg.* **9.** 307. Signed by A. J. COLLIS].

In the University clinic at Greifswald a variety of skin diseases are to be observed among the land-workers from the surrounding district and special attention has been given to the nodules which occur on the fingers of milkers. These are regarded by some as an abortive form of cowpox, and by others as a paravaccinia. The etiology is not clear and further investigations are required. A difficulty in making investigations into the condition is that it is seldom seen by doctors, as it does not interfere with work and clears up in a few weeks.

Some cases of cowpox among milkers from infection have been seen and illustrations are given showing the typical vesicles. Notes are given of an unvaccinated infant, one year old, who died after becoming infected with cowpox from a relative, and attention is called to the need of preventing persons suffering from cowpox attending unvaccinated children. Animal tests cannot be relied on to prove cowpox.

In one worker foot and mouth disease was diagnosed and the infection traced to an animal.

HERZBERG, K. (1933). Weitere Untersuchungen ueber die Zerstörbarkeit des Variola-Vakzinevirus durch Lichtenergie und Farbstoffe. **[On the Lethal Effect of Light and Dyes on Vaccine Virus]**.—*Zschr. Immun.-forsch.* **80.** 507-520. 2 figs. [Copied *verbatim* from *Bull. Hyg.* **9.** 349. Signed O. K. WRIGHT].

Out of a large number of dyes tested, only thiazin, acridin and thioxanthin

are able to destroy vaccine virus *in vitro* in less than five minutes by their fluorescent action in the presence of light. At a constant dilution of 1 in a million methylene blue and thiopyronin acted most quickly (20-40 seconds) while if the time were kept constant (1 hour) acridin was the most active, being lethal in a dilution of 1 in 50 million. *In vivo* long wave light has no lethal effect on vaccine virus alone but after the injection of small amounts of methylene blue it is nearly as lethal as ultra-violet light, which, up to seven hours after vaccination, causes a reduction in the number of pustules produced, and up to sixteen hours after causes delay in their development. With intravenous injection of methylene blue, however, untraviolet light reduces the number of pustules even 24 hours after vaccination. The action of sunlight is similar.

INVERTEBRATE VECTORS OF DISEASE.

—. (1934). **Report of Committee [U.S. Livestock Sanit. Ass.] on Tick Eradication.**—*J. Amer. Vet. Med. Ass.* **84.** 537.

This is a description of the present position with regard to tick infestation in the remaining three affected states of Texas, Florida and Louisiana. The committee formulate proposals for the final eradication of Texas fever ticks from the remaining infested areas.—J. E.

McIntosh, A. (1934). **Distribution of** *Boophilus annulatus australis* **(Fuller) in the United States.**—*Proc. Helminth. Soc. Washington.* **1.** 22. [Copied *verbatim* from *Rev. Appl. Entomol.* **22.** 129].

An examination of male ticks collected in 1931-33 from Florida, Louisiana and Texas showed *Boophilus annulatus microplus*, Can. (*australis*, Fuller) to be present in 23 counties in Florida. No ticks were received from 4 counties that were also in the area quarantined for tick fever of cattle (piroplasmosis) [cf. *Rev. Appl. Entomol.*, B.**22.** 57). This same variety was received from 3 counties in Texas. The males from several other counties in Texas and all the specimens from Louisiana were typical *B. annulatus*, Say. The hosts of *microplus* were cattle, horses, deer, goats and dogs in Florida, and cattle and horses in Texas. Ticks of both sexes from deer in Webb County, Texas, were identified as typical *B. annulatus*.

de Jesus, Z. (1934). **The Repellent and Killing Effects of Gordura Grass (Melinis Minutiflora Beauv.) on the Seed Tick.**—*Philippine J. Anim. Indust.* **1.** 67-68.

Gordura grass exudes a volatile oil which kills larval ticks on their way up the grass stems to the tops where they normally wait to be picked up by animal hosts. It is suggested that tick infested pastures should be sown with this grass in order to kill the larvae on them. The pasture must then be kept free from cattle for 90 days in order to allow time enough for the larvae to hatch from the eggs and be killed on the grass. In addition, gordura grass is a succulent and nutritious grass for livestock.—J. E.

I. Duke, H. L. (1933). **Relative Susceptibility of the Sexes of Glossina to Infection with Trypanosomes.**—*Ann. Trop. Med. & Parasitol.* **27.** 355-356. 1 table.

II. Nash, T. A. M. (1933). **A Statistical Analysis of the Climatic Factors Influencing the Density of the Tsetse Flies,** *Glossina morsitans* **Westw.**—*J. Anim. Ecol.* **2.** 197-203. 2 plates, 2 tables. [4 refs.]

III. JACKSON, C. H. N. (1933). **On the True Density of Tsetse Flies.**—*Ibid.* 204-209. [4 refs.]

IV. JACKSON, C. H. N. (1933). **On a Method of Marking Tsetse Flies.**—*Ibid.* 289-290.

I. A critical examination of the results of transmission experiments with tsetse and various polymorphic trypanosomes performed during six years indicates that, under laboratory conditions, at all events, the female of *G. palpalis* is more susceptible to infection with *T. gambiense* or with *T. rhodesiense* than is the male.

II. In a statistical investigation of the climatic factors influencing the density of tsetse flies, Nash found that there was no correlation between the mean monthly fly density and the mean monthly temperature. There was, however, a significant correlation of the monthly fly density with the current month's rainfall as well as with that of the two previous months. The correlation was positive, the fly density increasing with the rains and *vice versa*. A high degree of correlation was found between the fly density and evaporation of the same month as well as with the evaporation of the previous month ; the correlation here was negative, for as the evaporation rose the fly density fell.

A very high degree of correlation was found between the fly density and saturation deficiency of the same month and to a lower degree with that of the previous month ; again, the correlation was negative, the fly density falling with a rise in the saturation deficit.

An important result of the investigation was the discovery that temperature by itself did not affect the fly density and was only important in influencing the evaporating power, or saturation deficiency, of the atmosphere.

III. Jackson outlines two possible methods for estimating the true density of tsetse flies in terms of number of flies per unit area of infested country. One is suitable for areas not isolated from the remainder of the fly belt, but is attended by great practical difficulties ; the other is suited only to experimentation in isolated areas of moderate extent. Both depend in principle on releasing a known number of marked flies, computing the number still living on some date subsequent to their release and finding what proportion in random samples taken on that date is borne by marked to unmarked individuals. The results of one experiment by the second method gave 1,200 to 1,600 flies per square mile.

IV. Flies are marked initially with two to five spots of oil paint on the back of the thorax applied with a thin dry grass stem. Only two colours are used on any one day. The pair of colours used indicates the date of marking the recaptured fly, their disposition indicates their place of release, together with the hunger condition when released or any other particulars arranged for. Colours which have given satisfactory results are dark and light blue, dark and light green, brown, vermilion, pink, orange, ochre, yellow, white, purple and grey. These colours provide combinations for 78 days. On recapture the flies are marked with the two colours of the day of recapture. The positions of the marks are recorded as time would be, the thorax being considered as the face of a clock, as is a target in shooting.

—J. S. STEWARD.

DISEASES CAUSED BY METAZOAN PARASITES.

—. (1933). **Animal Parasite Investigations.**—*Rep. Chief Bureau Anim. Indust., U.S.A. 1933.* pp. 2-3 and 42-47.

PARASITES OF HORSES.—Encysted nematode larvae from the submucosa of the caecum and colon were identified as stages of two species of *Cylicocyclus*.

Steam at a pressure of 15 lb. destroyed all eggs and larvae of strongyles in 30 minutes when applied to a specially constructed manure box. The ability of equine strongyle larvae to migrate to the surface of soil was studied. Migration from a depth of five inches was found to occur in sandy loam, but not in clay soil.

It was ascertained that the larvae of *Gastrophilus intestinalis* reach the stomach 21 to 28 days after being taken into the mouth. This information is valuable in connection with the optimum time to give drug treatment.

PARASITES OF RUMINANTS.—Notes on *Ostertagia circumcincta* and *Cysticercus bovis* are given. Larvae of the latter were found still alive after 26 days in a "cooler." New snail hosts for *Fasciola hepatica* in the western states were found.

In a study of anaplasmosis in cattle it was found that cyclical transmission by *Rhipicephalus sanguineus* occurs and that *Ixodes scapularis* could transmit the disease experimentally.

Both *Babesia bigemina* and *B. argentina* occur in Louisiana.

The Bureau recommends the use of medicated rods for the treatment of warble fly larvae in the backs of cattle. These rods are rolled out of a thick paste composed of gum arabic – 6 parts, glue – 2 parts, tannic acid – 2 parts, derris powder – 8 parts with water *q.s.*

PARASITES OF SWINE.—Progress was made in the knowledge of the infection atrium of kidney worm larvae: it was proved that they can penetrate the intact skin when present in caked dung, etc., on the animal. This infestation is, therefore, largely controllable by hygienic measures.

Notes on research into methods of killing trichinae in pork and the significance of avitaminosis A on susceptibility to ascaris infestation are also given.

PARASITES OF POULTRY.—An investigation into the possible connection between protozoa and range paralysis resulted in the finding that a filtrable virus was the cause. Vinegar in the drinking water was found to be beneficial in experimental coccidiosis (*Eimeria tenella* infection) in chickens.—J. E.

NICHOLSON, A. J. (1934). **The Influence of Temperature on the Activity of Sheep-blowflies.**—*Bull. Entomol. Res.* **25.** Pt. 1. 85-99. 1 fig., 7 graphs. [10 refs.] [Copied *verbatim* from *Rev. Appl. Entomol.* **22.** 95].

As it was thought that a knowledge of the influence of temperature on the activity of blowflies would be of value in interpreting the results of trapping them in the field and in the prediction of the conditions and districts in which they would be active, experiments were undertaken at temperatures ranging from 0 to 45°C. [32-113°F.], using *Lucilia cuprina*, Wied., *L. sericata*, Mg., *Chrysomyia rufifacies*, Macq., and *Calliphora stygia*, F., four species of particular importance in the sheep blow-fly problem in Australia.

The following is largely taken from the author's summary: Details are given of the apparatus used and of the quantitative methods of recording activity. With constant temperatures the greatest activity occurred near the centre of the temperature range, whereas in an experiment with a progressively rising temperature (in which *L. cuprina* alone was used) it immediately preceded the upper thermal death-point. When the temperature is rising, activity occurs at a lower range than when it is constant, and "distress activity" appears at high temperatures. For the development of the necessary energy for full crawling and flight activity at the most favourable temperatures, rather long exposure to them is necessary. Flight and, to a less extent, crawling occur in bursts of activity, whether the temperature is rising or constant. The zone of activity of *L. cuprina* is higher and its zone of intense activity definitely narrower than the corresponding zones of *L. sericata*; this lends support to the argument that the differences that have led

to the evolution and separation of species may be inconspicuous ones that cannot be recognised by taxonomists. The curves for general activity and temperature preference correspond to the known description of the four species examined. It is shown that activity is a complex phenomenon and that the character of the results obtained is influenced by the kind of activity examined, by the methods of measurement used, and by the nature of the temperature conditions to which the insects are exposed.

BACKLUND, H. O. (1934). Zur Nahrungsfrage der Mallophagen anlässlich einer eigentümlichen Lebensweise von *Menopon biseriatum* Piag. [**A Contribution to the Question of the Food of Mallophaga, arising out of a peculiar Instance of Behaviour of** *Eomenacanthus stramineus*].—*Memo. Soc. Fauna Fl. fenn.* **9.** (1932-33). 191-193. [7 refs.] [Copied *verbatim* from *Rev. Appl. Entomol.* **22.** 121].

Eomenacanthus stramineus, Nitzsch (*Menopon biseriatum*, Piag.) has been found in Finland inside the quills of immature fowl feathers that had fallen out and shrivelled up. It is suggested that this Mallophagan, which normally feeds on the unhardened parts of the bases of feathers, had extended its feeding and injured some blood-vessels [cf. Rev. Appl. Entomol. B **21,** 189].

PAWLOWSKY, E. N., & STEIN, A. K. (1933). Ueber die Wirkung von Dermanyssus gallinae auf die Hautdecken des Menschen. [**On the Effect of** *D. gallinae* **on the Skin of Man**].—*Zschr. Parasitenk.* **5.** 421-424. 2 figs.

The authors quote the findings of several workers that *D. gallinae* produces severe lesions on the skin of human beings such as a " marked irritating exanthema " (OPPENHEIM) and " papular exematous dermatitis " (STILES and HASSALL). In continuation of their series of experiments on the effects of ectoparasites, they worked with this mite enclosed in petri dishes on the forearm. The lesions and sensations were recorded and portions of skin were removed for histological examination. The latter changes are figured. At the moment of biting there was a slight irritation which soon disappeared, but came back later. It was never severe enough to disturb the sleep of the experimental person. After 24 hours small rose-coloured areas appeared. Under a hand lens there were seen small, isolated, pointed, urticarial papules mostly near the border of the petri dish. The histological changes were slight. All the layers of the skin were distinct ; the stratum corneum was interrupted and there was an increase in the spaces of deeper layers. The changes represented a slight dermo-oedema characterized by dilatation of the capillaries and the presence of inflammatory infiltrate. They thus indicate that the effects of *Dermanyssus* on the skin are of a biochemical relationship to the epithelial cells. The parasite damages the stratum corneum with the chelicerae, but soon the saliva enters and sets up an oedematous inflammatory process in the other layers.

The appearances described indicate the slight effects of *Dermanyssus* upon the skin in contradistinction to the severe reaction and annoying subjective sensations usually described.—A. W. N. PILLERS.

ALLEN, J. A., & WARDLE, R. A. (1934). **Fluke Disease in Northern Manitoba Sledge Dogs.**—*Canad. J. Res.* **10.** 404-408. 4 figs. on 1 plate. [4 refs.]

An opisthorchid trematode, *Parametorchis manitobensis* n.sp., is recorded from the livers of sledge dogs from northern Manitoba. A key is given to the known species of *Parametorchis*. Infestation with the trematode produces chronic cirrhosis and anaemia, followed by muscular weakness and death. Infection is

believed to be contracted by ingestion of metacercariae in various lake fish and prophylaxis consists of the thorough boiling of such fish before use as dog food. —J. E.

BUBBERMAN, C., & KRANEVELD, F. C. (1934). Stephanofilariosis. V. Twee zware gevallen bij het rund. [**Stephanofilariasis. V. Two Cases in Cattle**].—*Ned. Indisch. Blad. Diergeneesk.* **46.** 149-151. 4 plates. [English and German summaries : abst. from orig.]

This is a well-illustrated article on cutaneous filariasis in cattle in the island of Celebes, Dutch East Indies. Lesions take the form of large hard papillomatous growths on the crest of the neck and withers. The causal parasite is *Stephanofilaria dedoesi*.—J. E.

SJÖBERG-KLAAVU, Agnes. (1934). Om nematoder i matsmältningsorganen hos får i Finland. [**Gastro-Intestinal Nematodes of Sheep in Finland**].—*4. Nord. Vet.-mötet. Helsingfors. 1933.* pp. 981-996. [27 refs.] [German summary : abst. from orig.]

The author made a survey of the gastro-intestinal parasitic worms of sheep in southern Finland and carried out experiments on drug treatment. Her list of worms includes *Strongyloides papillosus*, *Trichuris ovis*, *Capillaria longipes*, *Oesophagostomum columbianum*, *Chabertia ovina*, *Bunostomum trigonocephalum*, *Haemonchus contortus*, *Ostertagia circumcincta*, *Trichostrongylus colubriformis* and *T. capricola*. Adult specimens of the above were found and in addition the eggs of *Cooperia* and *Nematodirus* were observed in sheep faeces.

Amongst the anthelmintic drugs tested, tetrachlorethylene, given in four doses at intervals of four to six days, was found most effective. It must be followed by a purgative two days after the last dose. Carbon tetrachloride was found to be rather dangerous for general use. " Lentin " Merck was considered to be one of the best drugs against nematodes in sheep and a lick containing a copper salt, given as a powder in concentrated food, also gave good results.—J. E.

IMMUNITY.

PAARMANN, E. (1933). Der Nachweis von Tuberkulose-Antikörpern in der Milch durch die Komplementbindung. [**The Demonstration of Tuberculous Antibodies in Milk by Complement-Fixation**].—*Zschr. Fleisch- u. Milchhyg.* **43.** 163-164. [5 refs.]

The author used the technique of MENCK [this *Bull.* **2.** 627.] for the diagnosis of tuberculosis in 200 samples of milk, the result being compared with clinical, microscopic and animal inoculation tests. He considers that this method is reliable enough to be applied as a routine test in tuberculosis eradication schemes. —E. BREUSCH (LEIPZIG).

I. TOPLEY, W. W. C. (1933). **The Effect of Repeated Injections of a Bacterial Vaccine.**—*Brit. J. Exp. Path.* **14.** 408-412. 1 table. [5 refs.]

II. BERTHOLD, G. (1934). Bakteriologie, Immunbiologie und Höhenstrahlung. [**Bacteriology, Immunbiology and Cosmic Rays**].—*Berl. tierärztl. Wschr.* **50.** 3-7. 2 figs., 7 charts.

III. SALSBERY, C. E. (1934). **Intradermal Vaccination, or the Skin as an Immunological Organ.**—*J. Amer. Vet. Med. Ass.* **84.** 214-224. [25 refs.]

I. The effect of giving mice repeated inoculations of a vaccine, prepared from

a smooth strain of *Bact. aertrycke*, was to induce a gradually strengthening immunity up to about the seventh vaccination. Thereafter, the immunity commenced to wane and, by the 13th vaccination, was little stronger than that of the unvaccinated controls. This waning of immunity appeared to be specific and could not be assigned to generalized ill-health resulting from the administration of numerous doses of vaccine.

II. An attempt has been made to study the influence that cosmic rays may exert upon bacteria and upon biological resistance to infection. To exclude these rays, experiments were carried out more than 200 m. beneath the surface of the earth. One interesting finding was that streptococci which were strongly haemolytic under normal conditions failed to produce haemolysin when grown in the absence of cosmic rays. The experiments described open an extensive field for further research. [Cosmic rays are defined and discussed in this *Bull.* **3.** 568].

III. This article contains a brief introduction to the modern conception of immunity to infection. Intradermal injections can produce immunity in diseases such as typhoid fever and fowl pox. In the United States of America intradermal vaccination against anthrax has been used with satisfactory results. During the accompanying discussion it was stated that cases of so-called post-vaccination anthrax might be due to :– (1) a type of shock, the symptoms of which resembled anthrax, but in which no evidence of infection could be found ; (2) delayed pre-vaccination infection or (3) a post-vaccination infection with a strain of anthrax of exceptional virulence.—E. J. Pullinger.

Voigtländer, W. (1934). Untersuchungen ueber die Serumflockungsreaktion bei Malaria von Henry. [**Henry's Serum Flocculation Reaction in Malaria**]. —*Zschr. Immun.-forsch.* **81.** 377-400. [18 refs.] [Copied *verbatim* from *Trop. Dis. Bull.* **31.** 457. Signed by E. D. W. Greig].

Observations carried out on Henry's flocculation reaction in cases of malarial infection of man and animals.

As antigen the author employed melanin derived from the choroid of the eye of the ox ; he considers this more sensitive than iron. In his technique he employs a formalin control which excludes cases of kala azar by giving a positive formol-gel reaction in that disease. He employs only half the amount of serum, 0·1 c.c., and reagents recommended by Henry. The test is carried out in 5 tubes. The tubes are placed in a water bath at 37°C. for 2½ hours and then they stand at room temperature for half an hour. At the end of 3 hours the results are read. He divides his work into two parts. In the first he deals with the reaction in cases of inoculation malaria, normal human sera and in sera of patients without malaria. In the second part he records the results of his investigations on the reaction in different experimental animals, chronic piroplasmosis of dogs, bird malaria, and birds infected with halteridia. In all about 224 sera were investigated.

From his research he concludes :– In acute human malaria the reaction is positive. Patients who have suffered from other diseases but not malaria give a negative reaction. He has had only once a definitely positive reaction is another disease, namely, secondary syphilis. In acute, latent and chronic malarial infection of birds the reaction is positive also. In piroplasmosis of dogs and other animal infections (halteridia) related to malaria the reaction is negative. In inoculation malaria in general paralysis in men the reaction gives a fairly accurate picture of the development of the malaria and indicates the disappearance of the infection after treatment. He considers that Henry's melanoflocculation test is of considerable value in the diagnosis of malaria, and fills a lacuna, which had hitherto existed in the recognition of malarial infection.

I. Friedemann, U., & Elkeles, A. (1934). **The Blood-Brain Barrier in Infectious Diseases. Its Permeability to Toxins in Relation to their Electrical Charges.**—*Lancet.* **226.** 719-724 and 775-778. 5 tables. [55 refs.]

II. —. (1934). **Infectious Diseases and the Brain.**—*Ibid.* 799.

I. In this review of previous work by the authors and others, together with some previously unpublished work on toxins, it is concluded that the exchange of substances between blood and brain does not differ materially from that of other organs. The selective mechanism of the blood-brain barrier, designated B.B.B., is localized in the walls of the cerebral capillaries and coincides with the permeability of these vessels. It is demonstrated that the B.B.B. plays an important and hitherto overlooked part in the pathogenesis of infectious diseases. It appears that this barrier is impermeable to some toxins, e.g. diphtheria and *botulinum* toxins, which were generally supposed to owe their lethal effects to their actions on the brain. It is further shown that toxins differ amongst themselves in their ability to pass the B.B.B. Certain toxins, e.g. lamb dysentery toxin and cobra venom, pass the B.B.B. whilst others, e.g. tetanus, diphtheria and *botulinum* toxins, do not pass this barrier. From cataphoresis experiments it appears that the toxins of the second group carry a negative charge, whilst cobra venom carries a positive charge and lamb dysentery toxin is neutral at the pH of the blood. The iso-electric point of the latter toxin is approximately pH 7·4. From these experiments it appears that a negative charge inhibits passage through the B.B.B.

These results are also linked up with the incubation periods of the action of these toxins, those which do not pass the B.B.B. exhibiting a long incubation period whilst lamb dysentery toxin and cobra venom, which readily pass the B.B.B., act rapidly.

In the authors' experiments the permeability of the B.B.B. by toxins was tested by the following methods :– (a) artificial perfusion of the brain ; (b) auxoneurotropic effect ; (c) comparative determination of the lethal dose of the toxin by the intravenous and the intrathecal route and (d) identification of the toxin in the brain after intravenous injection. The auxoneurotropic effect depends upon the alleged fact that those substances which normally pass the B.B.B., and only those substances, pass the barrier much more readily if adrenaline and pituitrin are simultaneously injected.

II. Certain results of the previous paper are emphasized in this editorial article. Doubt is cast upon the previously accepted assumption that the symptoms characteristic of all fevers – such as apathy, insomnia, raised temperature, metabolic disturbances, vasomotor collapse and eventual death – are due to disturbances produced in the brain centres directly by bacterial toxins. The clinical importance of such studies is emphasized by reference to the authors' new treatment of diphtheria following upon their discovery that the diphtheria toxin does not reach the brain. It is pointed out that the toxins of many infections, on this view, should produce their effects peripherally and not centrally and it is probable that a better understanding of their action will lead to further improvement in their treatment.—W. R. Wooldridge.

DISEASES, GENERAL.

—. (1934). **Report of Committee [U.S. Livestock Sanit. Ass.] on Miscellaneous Transmissible Diseases.**—*J. Amer. Vet. Med. Ass.* **84.** 540-542.

Foot and Mouth Disease.—A brief note is given on recent outbreaks in the Union of South Africa, Jugoslavia and Great Britain.

EQUINE ENCEPHALOMYELITIS.—A progress report is given on this disease in 1933. Outbreaks occurred in the middle-west and eastern states of America, reaching a peak in September.

CALIFORNIAN OUTBREAKS.—[Swine Disease]. In March, 1933, a disease of unknown causation, characterized by the formation of vesicles on the snout and feet of garbage-fed swine, occurred on a ranch near San Diego, California. Four infected and exposed herds, containing over 5,000 pigs, were destroyed. A limited number of animal inoculations were made but the disease was not identified.—J. E.

I. WYSSMANN, E. (1933). Zur Frage der Uebertragung des bösartigen Katarrhalfiebers des Rindes durch Schafe. [**Transmission of Bovine Malignant Catarrh through Sheep**].—*Schweiz. Arch. Tierhlk.* **75.** 577-591. 1 table, 1 chart. [16 refs.]

II. GÖTZE, R. (1934). Zur Frage der Uebertragung des bösartigen Katarrhalfiebers der Rinder durch Schafe. Bemerkungen zum gleichbetitelten Artikel von E. Wyssmann. [**On the Transmission of Malignant Bovine Catarrh through Sheep (Comment on Above Article)**].—*Ibid.* **76.** 85-92. 1 fig. [6 refs.]

III. WYSSMANN, E. (1934). Bemerkungen zu vorstehendem Artikel von R. Götze. [**Observations on Above**].—*Ibid.* 92-96.

IV. GÖTZE, R., & LIESS, J. (1934). Immunisierungsversuche gegen bösartiges Katarrhalfieber der Rinder. V. Mitteilung. [**Immunization against Malignant Bovine Catarrh. V.**]—*Deuts. tierärztl. Wschr.* **42.** 113-115. 1 table. [6 refs.]

V. MIESSNER, H., & SCHOOP, G. (1934). Zur Aetiologie des bösartigen Katarrhalfiebers. [**Cause of Malignant Bovine Catarrh**].—*Ibid.* 115-119. 1 table. [29 refs.]

I. As a result of one experiment, in which one sheep was used, and on the evidence collected from replies to a questionnaire received from 70 Swiss farmers who had had cases of malignant catarrh among their cattle and who also kept sheep, Wyssmann formed the opinion that sheep do not play a part in the spread of this disease in Switzerland.

II. The author criticizes the reliability of the evidence on which Wyssmann based his opinion. According to Götze's experience in Germany, the rule is :—" No malignant catarrh without sheep." He supports his opinion with systematic arguments, referring particularly to the differential diagnosis of malignant catarrh and giving instances from his own experience.

III. Wyssmann replies categorically to the above, concluding with the statement that we are still in the dark as regards our knowledge of the pathogenesis of the disease.

IV. Five calves were vaccinated, three with Zwick's and two with Ernst's Borna disease brain vaccine, and were later exposed to infection with malignant catarrh. Two calves died from malignant catarrh and one died from another infection ; the other two and one control calf survived.

These results, though limited, are considered to support the opinions of ERNST, ZWICK and STOSS, that there is a close connection between Borna disease and malignant bovine catarrh.

V. Miessner and Schoop tried to transmit malignant catarrh to rabbits, sheep and guinea pigs, but without success. They also obtained negative results with the Weil-Felix reaction, using serum from clinical cases of malignant bovine catarrh.—J. E.

PRODANOFF, P. (1933). **Malignant Catarrhal Fever of Cattle and Buffaloes in Bulgaria.**—*Vet. Klin.* **1.** 17-20. 2 figs. [In Bulgarian : abst. from German summary].

Malignant catarrh occurs sporadically in cattle and buffaloes in the southern parts of Bulgaria, chiefly in a combined intestinal and ocular form. In all cases seen by the author, the affected bovines had been living in close contact with sheep.—J. E.

KOLBE, L. (1933). Příspěvek k serové léčbě při morbus maculosus equorum. [**Treatment of Purpura Haemorrhagica in the Horse with Specific Serum**]. —*Klin. Spisy Skoly Zverol. Brno.* **10.** 201-226. [51 refs.] [German summary : abst. from orig.]

The author records the successful treatment of 19 cases of purpura haermorrhagica in horses by the use of blood serum from recovered horses in repeated subcutaneous doses of 30 to 40 c.c. The disease occurred in both the donors and recipients after streptococcal infection [strangles].—E. PRIBYL (BRNO).

CARLSTRÖM, B. (1934). Om myoglobinuri hos husdjuren. [**Myoglobinuria in Domestic Animals**].—*4. Nord. Vet.-mötet. Helsingfors. 1933.* pp. 883-901. 2 figs. [Abst. from English summary].

The author first differentiates myoglobinuria from haemoglobinuria, stating that the spectroscope is a useful aid in this respect. He discusses the pathogenesis of myoglobinuria paralytica in the horse and considers that it originates from an abnormal accumulation of lactic acid in the musculature, such as occurs when horses in hard training are rested suddenly. This accumulation leads to hyaline degeneration, which is the precursor of the actual myoglobinuria.

Myoglobinuria has also been observed in cattle, chiefly in young beasts soon after being let out to pasture in the spring. [This is a further report of progress in research work carried out by Carlström since 1930, this *Bull.* **1.** 234].—J. E.

I. BRUNSCHWIK, M. (1934). Quelques recherches sur le sang des Chevaux atteints d'hémoglobinurie. [**Investigations on the Blood of Horses Affected with Myoglobinuria**].—*Bull. Acad. vét. France.* **7.** 118-120.

II. BRUNSCHWIK, M. (1934). L'hétérohémothérapie dans le traitement de la parésie hémoglobinurique. [**Heterohaemotherapy in Equine Myoglobinuria**].—*Ibid.* 120-121.

I. The author gives the results of his observations on the behaviour, in test tubes, of blood taken from horses affected with myoglobinuria. The blood coagulated very rapidly and the separation of corpuscles from the serum was much slower than normal.

II. A report of a few cases of myoglobinuria which recovered after the administration of normal bovine blood subcutaneously or intravenously.—J. E.

SCHOFIELD, F. W. (1934). **Brief Report of an Epidemic of Infectious Diarrhoea in Cattle.**—*Rep. Ontario Vet. Coll. 1933.* pp. 62-63. [1 ref.]

A preliminary clinical description of an epizootic diarrhoea in cattle, which spread very rapidly among herds in Ontario in the winter of 1933.

No adequate bacteriological investigation has been made, but the author is of the opinion that it may have been a vibrionic infection.—J. E.

I. EILMANN, H. (1933). Hämorrhagische Diathese beim Kalbe. [**Haemorrhagic Diathesis in Calves**].—*Deuts. tierärztl. Wschr.* **41.** 749-751. [24 refs.]

II. MEJLBO, E. (1934). **On the Relative Frequency of Various Diseases among Calves in Denmark.**—*Acta path. et microbiol. scand.* Suppl. 18. 143-164. 3 figs., 1 table. [12 refs.] [Orig. in English].

I. The carcasses of two calves which showed a haemorrhagic diathesis were encountered in abattoirs in Hanover. The animals were about six months old and, prior to slaughter, appeared to be healthy. The carcasses were in good condition ; the musculature was firm, but studded throughout with pin-head and streaky haemorrhages. Bony protuberances and superficial joints were similarly affected, there were subperiosteal haemorrhages on the ribs, and the distal cartilaginous surfaces of the third carpal bones showed similar lesions. There were haemorrhages below the serous membranes, in the mucosa of the respiratory and alimentary tracts, and also in the brain substance and marked haemorrhagic infiltration of the lymphatic glands.

The condition was considered to be hereditary since there was no evidence of infection, toxaemia or disease of the haemopoietic system.

II. Of 5,129 calves examined *post mortem* at the State Serum [and diagnostic] Laboratory of Denmark, 2,749 died from acute infections, 1,002 from sub-acute and chronic conditions, 68 from parasitic diseases, 476 from non-specific enteritis and the remainder from unidentified causes. 40 per cent. of all deaths were attributed to infection with *Bact. coli* or closely allied organisms, 10 per cent. to *Corynebact. pyogenes*, 8 per cent. to diplococcus, 6 per cent. to *Actinomyces necrophorus*, 3 per cent. to pasteurella, and 0·5 per cent. each to salmonella and clostridium infections.

The number of carcasses arriving for examination bore a direct relationship to the calving rate for the season of the year ; also the incidence of any particular disease could be correlated with the calving rate, except in the case of a disease like pasteurellosis which attacks old calves as readily as young ones.

—E. J. PULLINGER.

I. BREED, F. (1933). **Recognition of the Most Important Infectious Diseases of Swine in the United States.**—*J. Amer. Vet. Med. Ass.* **83.** 656-665. 3 tables. [12 refs.]

II. KINSLEY, A. T. (1934). **The Infectious Swine Disease Situation.**—*Vet. Med.* **29.** 24-28.

III. BECKETT, E. F. (1934). **Notes on Some Pig Diseases.**—*Vet. Rec.* **14.** 179-184. 1 table, 3 charts.

I. The three diseases of swine which the author considers the most important in the United States of America are (1) hog cholera [swine fever], (2) infectious enteritis [necrotic enteritis, paratyphoid] and (3) swine erysipelas. The history of investigations into the cause of swine fever, both before and after the discovery of the virus in 1905 is given. From this date infectious enteritis has gradually assumed great importance, causing losses in both vaccinated [against swine fever] and unvaccinated herds.

In 1931, FOSTERMANN and the author proved that acute septicaemic swine erysipelas existed among large numbers of animals and that it extended over a wide area.

The aetiology, modes and vehicles of infection, and comparisons of the principal pathological lesions of these three diseases are passed in review. The brief accounts and tables which follow are a useful contribution to the differential diagnosis of these diseases and will be appreciated by those who experience difficulty in distinguishing them.

II. This is a clinical account of a number of infectious diseases of swine in

the United States of America as seen by Kinsley and presented by him to the Oklahoma Veterinary Medical Association. The diseases dealt with are swine fever, haemorrhagic septicaemia [swine plague], swine influenza, pulmonary oedema, erysipelas, necrotic enteritis, dysentery, coccidiosis and amoebic dysentery. There does not appear to be any important addition to our knowledge in the paper, but it contains a number of interesting statements. Infectious necrotic enteritis is second only to swine fever in economic importance. A table shows the differential diagnosis of these diseases by means of the symptoms and lesions which characterize each of them.

III. This is a practitioner's account of some of the diseases of swine met with in practice. The subjects dealt with are swine fever diagnosis, anaemia in suckling pigs, parasites and tuberculosis.

The author expresses dissatisfaction with regard to the control and methods of diagnosis of swine fever in this country. He is of the opinion that a great number of outbreaks of " mild swine fever " are in reality necrotic enteritis, and believes that ulceration in itself is a most unsatisfactory basis on which to establish a diagnosis.

The number of suckling pigs dying from anaemia in this country is high. It is a deficiency disease. A series of experiments on large numbers of pigs demonstrated that the feeding of iron salts to a sow did little to raise the haemoglobin content of the blood of the young pigs, but that a soluble iron salt fed individually to the young pigs checked the anaemia.

The problem of parasites is of the greatest economic importance to the pig industry. Infested pigs have a typical history and give a definite clinical picture. The ascaris is the most important worm, but the pulmonary strongyles must not be neglected. The whip worm, unless present in large numbers, causes little trouble. Oil of chenopodium is recommended as an anthelmintic, the dose being 20 minims at two months old, increasing by 5 minims for each additional fortnight until at 12 months the dose is 2 dr. It is given after a fast of 24 hours in from ½ to 1 oz. of linseed oil, and next day a dose of magnesium sulphate is added to the food. Individual treatment is essential for success. For respiratory strongylosis 2 c.c. of a solution of 1 part of oil of turpentine in 19 of methylated ether is injected down each nostril by means of a hypodermic syringe without the needle.

In dealing with porcine tuberculosis, the double intradermal test has proved most reliable. It is done at the base of the ear or in the skin of the belly. The herds tested had not been given milk or grazed on land occupied by cattle or poultry and were consequently comparatively free from the disease. Ten animals slaughtered gave confirmatory results on *post-mortem* examination with one exception, viz :– a definite reactor showed no visible lesions.—A. W. N. Pillers.

I. Ball, V., Zaessinger, J., & Martin, P. (1933). Môle hydatiforme embryonnée chez une vache. **[Cystic Mole in a Cow]**.—*Bull. Soc. Sci. vét. Lyon.* **36.** 333-335.

II. Følger, A. F. (1934). Ueber die Blasenmole beim Rinde. **[Cystic Mole in Cattle]**.—*Acta path. et microbiol. scand.* Suppl. 18. 104-125. 5 figs. on 4 plates. [5 refs.]

I. A case report of an enormous cystic mole weighing some 25 kg., which was found in the uterus of a cow slaughtered on account of general debility near to what was thought to be a full term of gestation. There was a history of injury to this cow by a bull and it is supposed that this fact had a part in transforming a small embryo into the mole, which was a multi-coloured lobulated mass.

II. This is a review of the literature on cystic mole in cattle, with a detailed

description of five cases examined by the author and a discussion of the pathological classification of this condition. Reference to human pathology is an incomplete guide, on account of the difference in placentation.

As a result of his study, Følger differentiates four distinct types of cystic mole in cattle : they are characterized as follows :-(1) by the formation of villous masses in the placenta unaccompanied by cysts ; (2) by polypoid multilocular cyst-containing masses composed of connective tissue ; (3) by a mass of small cysts formed by the chorionic villi ; this type conforms to the human cystic mole and (4) by tumour-like cystomatous transformation of the foetal placenta. These are illustrated by photographs.

This is a valuable contribution to the scanty veterinary literature on this condition.—J. E.

MØRKEBERG, A. W. (1934). Kronisk forhudsbetaendelse hos tyren som aarsag til mangelfuld eller helt ophaevet bedaekningsevne (impotentia coëundi). Acrobustitis chronica follicularis et inuurativa. **[Inflammation of the Prepuce in Bulls as a Cause of Impotence]**.—*4. Nord. Vet.-mötet. Helsingfors. 1933.* pp. 545-566. 3 figs. [Abst. from German summary].

A detailed clinical description of a chronic indurative inflammation of the prepuce in bulls leading to phimosis and consequent impotence. Diagnosis is made on the anaesthetized animal and successful treatment can only be obtained by surgical means.—J. E.

BERTRAND, I., CARRÉ, H., & LUCAM, F. (1933). Lithiase pulmonaire chez le Mouton. **[Pulmonary Lithiasis in the Sheep]**.—*Bull. Acad. vét. France.* **6.** 409-417. 3 figs. [9 refs.]

A description of pulmonary calculus formation in four sheep, a condition which the authors state is almost unknown in veterinary literature. The symptoms are similar to those of broncho-pneumonia. On autopsy the visceral pleura is studded with a fine gravel-like deposit and the smaller air passages and the lung tissue contained a similar deposit. The histological character is described and illustrated.—J. E.

HJÄRRE, A. (1933). Ueber das Vorkommen der Amyloiddegeneration bei Tieren. **[The Occurrence of Amyloid Degeneration in Animals]**.—*Acta Path. et microbiol. scand.* Suppl. 16. 132-162. 12 figs., 2 plates. [62 refs.] [Orig. in German].

A review is given of the literature (mostly German), of which there is a surprising amount, dealing with amyloidosis in animals. The author then describes an investigation into 64 cases collected during the course of ten years in Stockholm, the cases including 8 horses, 32 cattle, 11 dogs, 1 cat, 8 fowls, 2 ducks and 1 turkey.

From the literature cited and from his own cases, the author concludes that this degeneration is not so uncommon as is generally accepted. Further, as in the case of human beings, amyloidosis is usually associated with and follows as a sequel to some chronic disease, of which the commonest is undoubtedly tuberculosis. Idiopathic amyloidosis, however, also occurs.

In horses the organs most commonly affected were the liver, spleen, suprarenal gland, kidney and intestinal wall. As is well known, amyloid degeneration occurs very commonly amongst serum horses ; according to one reference cited by the author, as many as 80 per cent. of serum horses may be affected. Rupture of the affected liver and death from internal haemorrhage occur in a large number of animals.

In dogs the commonest sites were the kidneys, spleen, and suprarenal glands and, contrary to the work of NIEBERLE and COHRS [(1931). Jena : G. Fischer.] the degeneration was usually idiopathic and not associated with tuberculosis. Clinically, amyloid kidneys in the dog may result in renal inefficiency and the urine may show a lowered specific gravity and massive albuminuria. Amyloidosis of the kidneys in dogs may also be associated with contracted kidney ("Amyloidschrumpfniere ").

In birds the commonest sites were the liver, spleen and kidneys, and in six out of the eight hens examined the condition was associated with tuberculosis.

The anatomical and histological appearances of affected organs are described in detail. Three cases of particular interest are noted, recording a nodular form of skin amyloidosis in the horse.—J. R. M. INNES.

CLAUDE, A., & MURPHY, J. B. (1933). **Transmissible Tumours of the Fowl.**—*Physiol. Rev.* **13.** 246-275. 1 table. [15 pp. refs.]

This paper does not include any detailed account of the individual tumours that have been studied, but attempts to present principally the properties of the tumour agents with a view to throwing some light on their nature.

Chicken tumour 1 was used for the experimental work. When Berkefeld candles are used the filtrate of this tumour is a clear fluid more or less coloured with blood pigments and usually presents a marked viscosity. If distilled water is used for the extraction, the reaction of the extract is around pH 6·6. Purification by adsorption gives a purified fraction which also exhibits the viscosity of the plain tumour extract. Chemical tests on this material show that practically all proteins have been removed. This purified fraction, when submitted to biological tests, is shown to be lacking in the ordinary antigenic properties which are possessed by the crude tumour extracts.

The method of adsorption and elution, widely applied by WILLSTÄTTER to the concentration of enzymes, has failed with the chicken tumour agent in the sense that no enrichment of the active principle could be obtained. Reference is also made to precipitation tests with gelatin and purification by dialysis.

The authors claim that it is demonstrated that the causative principle of chicken sarcoma can be obtained in purified solutions potentially as active, regarding their powers of inducing tumours, as the crude original extract. Also they believe that the facts which have been reported are in favour of the hypothesis that the specific principles of chicken tumours are comparatively simple substances which belong to the field of biochemistry rather than that of bacteriology.—NORMAN DOBSON.

SJÖBERG, Agnes. (1934). Användandet av vaccin vid tumörbehandling. [**Vaccination against Neoplasms**].—*4. Nord. Vet.-mötet. Helsingfors. 1933.* pp. 1017-1020. [German summary : abst. from orig.]

The author describes the preparation, use and results of the biological therapy of papillomata in cattle and of superficial sarcomata in the horse. The respective tumours were excised, ground up, sterilized and made into a filtrate. After the subcutaneous inoculation of these preparations no new growth of the tumours followed, but the evidence provided is incomplete.—J. E.

SCHULHOF, A. (1933). Hypoglykaemie a hypokalcaemie jako příčny puerperální paresy krav ve světle Kloboukovy iontové theorie o pathogenese této choroby. [**Hypoglycaemia and Hypocalcaemia as Causes of Milk Fever in Cows**].—*Klin. Spisy Skoly Zverol. Brno.* **10.** 23-45. 6 tables. [12 refs.] [German summary : abst. from orig.]

The author gives the following conclusions from experiments carried out on

sheep with insulin, parathyroid extract and prolan, to study the clinical picture of hypoglycaemia and hypocalcaemia in relation to the nature of milk fever :–

The insulin coma is quite different from the comatose phase of milk fever ; the examination of blood serum from comatose sheep showed the content of calcium, phosphorus and magnesium to be normal. Parathyroid extract injected in large doses increased the Ca content in the blood, but was of no practical value for the prophylaxis of milk fever. Prolan injected in massive doses did not increase the Mg content of the blood.

The experiments did not confirm the hypoglycaemia theory, nor the hypocalcaemia theory (parathyroid deficiency). They brought further considerable support to KLOBOUK's theory, according to which the nature of milk fever may be understood as a magnesium narcosis.—E. PRIBYL (BRNO).

PUBLIC HEALTH.

I. —. (1933). Staatliches Veterinär-Untersuchungsamt, Königsberg (Pr.). Bakteriologische und serologische Milchuntersuchungen im Jahre 1932. [**State Veterinary Diagnosis Office, Konigsberg. Bacteriological and Serological Milk Tests in 1932**]. [WEBER].—*Zschr. Fleisch- u. Milchhyg.* **44.** 111-114. 3 figs.

II. HUCK, W. (1933). Beitrag zur Untersuchung und Beschaffenheit der Handelsmilch. [**Examination of Market Milk**].—*Berl. tierärztl. Wschr.* **49.** 461-464. 5 tables. [25 refs.]

III. LÜCK, W. (1933). Zur Untersuchung von Gesamtmilchproben auf Tuberkelbakterien. [**Examination of Milk in Bulk for** *Mycobact. tuberculosis*].—*Tierärztl. Rdsch.* **39.** 807-814. 4 tables. [28 refs.]

IV. SCHÖNBERG, F. (1934). Ueber Erfahrungen bei der mikroskopischbakteriologischen Untersuchung von 40000 amtlich entnommenen Marktmilchproben. [**Experience in the Bacteriological Examination of 40,000 Milk Samples**].—*Berl. tierärztl. Wschr.* **50.** 56-60. 9 figs. on 2 plates.

Since each of these reports deals with large numbers of samples, it is impossible in a short abstract to do more than indicate the scope of the examination and any general conclusion of importance.

I. Weber reports on 10,136 samples of milk, which were examined for evidence of admixture of mastitis milks, *Mycobact. tuberculosis* (guinea pig inoculation) and for brucella. The latter tests were made by whey agglutination tests (a new method for obtaining clear whey being described) and by guinea pig inoculation intramuscularly.

II. During 1932, 213 samples of bulked milk and 129 herd samples were examined. Guinea pigs were inoculated intraperitoneally with cream and sediment from 30 c.c. of each sample. *M. tuberculosis* was thus detected in 4·1 per cent., brucella were cultivated from spleen in 7·9 per cent. whilst a further 13·2 per cent. of guinea pigs showed serum agglutinins at 1 : 40 or above, at 11 days or at five weeks. Twenty animals showed agglutinins at 11 days and not at five weeks. Agglutination tests were also made with whey, 21 being positive. The question of the best method for the detection of brucella infection is discussed and a valuable table is given showing the correlation between the results of the several tests. Mastitis streptococci were detected in 11·1 per cent. Most samples showed a half to five million cells per c.mm., whilst the direct microscopic bacterial count (Skar's method) was in most cases one to ten millions. The count obtained by cultural methods was definitely lower, 100,000 to two millions. The various data are compared with those of other German areas.

III. From a full discussion of the results obtained in the examination of bulk samples which had been taken in the course of the tuberculosis campaign in the Posen-West Prussian area from 1930 to 1932 (3,546 samples in all, averaging 12 cows each and of which 2 to 2·9 per cent. proved positive), the author concludes that bulk sampling is a great help, particularly if the results are followed up properly by clinical examination, and the examination of bronchial mucus or milk samples from suspect animals. This method was responsible for the finding of more than half of the total cases of udder tuberculosis discovered and also resulted in the detection of a large number of previously unsuspected cases of open tuberculosis of the lungs.

IV. Schönberg discusses methods. For examination for *M. tuberculosis* and brucella, milk sediment and cream was used to inoculate guinea pigs subcutaneously in the thigh, examinations of the nearest lymph glands being made if they became swollen – for *M. tuberculosis* microscopically and for brucella by sowing on to liver agar. Tests for brucella agglutinins were also carried out on slides. Search for evidence of admixture of mastitis milk was made by microscopic examination of centrifuge deposit. The author believes that the appearance of eosinophile leucocytes is the first sign of mastitis.—A. W. Stableforth.

Thurston, L. M., & Olson, H. C. (1933). **The Bacterial Flora of High-Grade Milk before and after Pasteurization.** *West Virginia Sta. Bull.* No. 255. pp. 24. 6 figs. [Copied *verbatim* from *Expt. Sta. Rec.* **69.** 706].

The milk used in this study was mostly machine-drawn, and conditions were so controlled that the milk usually had a standard plate count lower than 10,000 bacteria per cubic centimeter before pasteurizing. Samples were taken before and after pasteurizing at 145°F. ± 0·5° (62·8°C.) for 30 minutes. A machine-filled bottle obtained after the milk had been pumped over a covered surface cooler and passed into the covered tank of a bottler was also used for examination. Two tests of bacterial reduction by pasteurization were made, using the Standard Methods of Milk Analysis, except that in one test the agar used contained 1 percent. of lactose.

Under the conditions of this study, pasteurizing low-count milk changed the bacterial flora so that on subsequent storage acid developed slowly. Coagulation occurred at low acidities, probably due to the production of a rennin-like enzyme by the bacteria. There was no tendency for peptonizing bacteria to overgrow other types in raw or pasteurized bottled milk held for 4 days at temperatures ranging from 36° to 56°F. The pasteurized bottled milk had a decided tendency to develop a " cappy " flavor after 2 days' storage at the above temperatures.

Juranic, A. (1933). O počítání zárodků v mléce metodou mikroskopickou a kultivační. **[Titration of Bacteria in Milk by Microscopic and Cultural Methods].**—*Klin. Spisy Skoly Zverol. Brno.* **10.** 175-200. 14 tables. [15 refs.] [German summary : abst. from orig.]

For the hygienic control of milk and milk products it is of assistance to use the microscopic bacterial count. This method is less expensive and quicker than the cultural method. The number of bacteria found by the microscopic method is always higher than that found by cultivation. The microscopic method is not applicable when the material contains very few bacteria.

For the identification of bacteria the cultural method cannot, of course, be replaced by any other method.

Before examination of the milk the layer of fat must be perfectly dispersed, because the number of bacteria in this layer is usually greater than that in the remainder of the sample.—E. Pribyl (Brno).

KELLY, C. D. (1934). **Controlling Ropy Milk Outbreaks.**—*New York State Agric. Expt. Sta. Tech. Bull.* No. 631. pp. 18. 1 fig. [Copied *verbatim* from *Expt. Sta. Rec.* **70.** 236].

An investigation of an outbreak of ropy milk was undertaken at a plant that had been troubled with this condition over a period of two years.

The equipment and method of handling the milk were studied, and it was found that the ropiness was due to bacteria which gained entry through pipes that were used first for raw and later for pasteurized milk. Milk returned from stores and wagons after it had become ropy aggravated the condition. One lot of such milk contained as many as 32,000 ropy bacteria per cubic centimeter. Keeping this returned milk out of the plant and correcting methods of handling the milk made it possible to free the equipment of the organisms by means of steam, hot water, and chlorine.

A short review is also given of two such outbreaks on farms, with recommendations for correcting the trouble.

—. (1933). **Slaughter-House Reform.**—*Lancet.* **225.** 1504.

The Ward Richardson Lecture for 1933 (delivered under the auspices of the Model Abattoir Society) by Prof. J. H. JONES deals with the problem of private and municipal abattoirs in this country. Both are objected to owing to their small size and consequent inability to utilize by-products to their fullest extent. The Committee on Slaughterhouse Reform recommends a scheme based on a regional monopoly, with large-scale production, controlled by a National Slaughter-House Board – a statutory, non-profit-making body. Such a scheme would help to eliminate waste and provide a steady supply of by-products. It would also enormously facilitate the inspection of meat and so raise the average quality.—D. J. ANTHONY.

THERAPEUTICS.

I. MÖNNIG, H. O., & MARAIS, I. P. (1933). **The Administration of Anthelminthics to Horses in Bran.**—*Onderstepoort J. Vet. Sci. & Anim. Indust.* **1.** 59-61. 1 chart. [1 ref.]

II. MÖNNIG, H. O. (1933). **The Chemotherapy of Oesophagostomiasis in Sheep.**—*Ibid.* 67-76. 8 tables. [8 refs.]

III. SLATTER, E. E., PARK, S. E., & GRAHAM, R. (1933). **Studies of Horses Treated for Strongylidosis.**—*North. Amer. Vet.* **14.** No. 3. 19-33. 8 figs., 3 tables, 6 graphs. [4 refs.]

IV. MAGENS, H. J. (1933). **Anthelmintic Treatment of Small Ruminants.**—*Vet. Med.* **28.** 490-493. 5 figs.

I. A method described by ROGER, JOUVEAUX and PLATEAU of administering anthelmintics in bran appeared attractive if efficacious. Critical experiments with oil of chenopodium and carbon compounds showed the method to be ineffective, whereas the agents employed, if given by stomach tube, were efficacious.

II. Remedies effective against *Haemonchus* are known to be ineffective against *Oesophagostomum*.

The problem of finding a satisfactory remedy is partly one of physiology and is not likely to be solved until a method of dosing sheep into the abomasum is evolved.

The results obtained with 72 different drugs and combinations of them were on the whole unsatisfactory. The most promising results were obtained with arsenious sulphide and sodium fluosilicate.

It is suggested that relatively insoluble drugs, which are most likely to reach the colon, will give the best results.

III. The authors describe their experiences with 140 army horses affected with strongylidosis.

Diagnosis was based on clinical signs, faecal examinations and *post-mortem* examination on six horses which died before treatment. Treatment consisted of oil of chenopodium in linseed oil or mineral oil and carbon tetrachloride in capsule. Improvement in condition and body weight resulted ; selected cases appeared to benefit by retreatment.

Observations were made on the tonic value of certain haematinic drugs given after treatment. The results were either negative or inconclusive.

IV. A brief résumé of the clinical signs, diagnosis and treatment of tapeworm disease and stomach worm infestation in sheep and goats. The author recommends picric acid and its salts for stomach worms and kamala for tapeworms.

No doses are given and no accurate data on which the efficacy of treatment may be assessed.—GEO. F. BODDIE.

I. ANDERSEN, A. (1934). Sterilitetsbehandling med spiret Hvede. [**Treatment of Sterility with Sprouting Wheat**].—*Med. dansk. Dyrl.* **17.** 113-116.

II. BAY, F., & VOGT-MØLLER, P. (1934). Fortsatte Undersøgelser angaaende Sterilitetsbehandling af Køer og Grisesøer med Hvedekimolie (E-Vitamin). [**Wheat Germ Oil against Sterility in Cows and Sows**]. —*Ibid.* 166-169. [8 refs.]

I. Owing to the fact that treatment with wheat germ oil is rather expensive, the author tried, during the winter, to feed impotent bulls and, later on, the cows of a large herd, with a handful of sprouting wheat daily. The cows were fed from 14 days after calving to some time after the first oestrum. The results are said to be extremely satisfactory.

II. A preparation known as " fertilan " [a wheat-germ oil product] was employed. 20 c.c. is injected intramuscularly or hypodermically. It was used in the case of sterile cows and sows with the result that about 70 per cent. became pregnant.—H. C. BENDIXEN (COPENHAGEN).

—. (1933). **Treatment for Internal and External Parasites.**—*Rep. Chief Bureau Anim. Indust., U.S.A. 1933.* pp. 15-16 and 46-47.

The Bureau prepares and issues outfits for testing the strength of arsenical, lime-sulphur and nicotine dipping fluids. A method of clarifying peaty waters prior to testing arsenical dips was adopted.

" Orthophenylphenol " in coconut-oil soap was found to be a good external parasiticide for dogs and for kennels.

The partial substitution of fluorine for chlorine in the chlorinated hydrocarbon anthelmintics resulted in an increase in efficacy.

" Fouadin " given intramuscularly was found to kill all the embryos, and some of the adults of *Dirofilaria immitis* in the hearts of dogs.

All the known vegetable taenicides were tested for tapeworms in chickens. The results were not completely successful.

Normal butylidene chloride, in a dose of 0·2 c.c. per kg. body weight, was found to be valuable in ascariasis in foals of four to seven months of age.

" Carbon disulphide in a dose of from 8 to 10 cubic centimeters per 100 pounds of body weight was found to be effective for the destruction of the swine stomach worms *Hyostrongylus rubidus* and *Ascarops strongylina*. The drug was only partially effective when given in smaller doses. Carbon disulphide causes considerable gastritis but this is of short duration and apparently results in no detrimental effect on the animal.

"Critical tests on lambs indicated that a 1-percent. solution of copper sulphate containing 0·75 percent. of 40-percent. nicotine sulphate was very effective for the removal of the common sheep stomach worm and partially effective for the removal of six other nematode species. The results against tapeworm (*Moniezia* spp.) were unsatisfactory."

—J. E.

I. DUERDEN, J. E., MARÉ, G. S., & BOSMAN, V. (1933). **Influence of Regular Dipping on the Merino Sheep and its Fleece.**—*Onderstepoort J. Vet. Sci. & Anim. Indust.* **1.** 567-580. 9 tables. [7 refs.]

II. BOSMAN, V., & BOTHA, P. S. (1933). **A Study of Wool from Merino Stud Rams.**—*Ibid.* 581-594. 4 figs., 5 tables. [21 refs.]

I. This paper deals with an experiment carried out with Merino sheep on a farm in the Eastern Province to see whether they could be regularly dipped without harm to the sheep or the fleece. The dipping was carried out at weekly intervals for a year. One lot of sheep was dipped in arsenite of soda, one in water and a third lot remained undipped. It was concluded that dipping did not affect the condition of the sheep. Arsenite soda had no influence on the weight of the fleeces, fibre thickness, staple length or fibre contour. Some deterioration in the colour and appearance of the wools was noticed, probably due to the hardness of the water used. The wool was reduced in value by about 8 per cent.

II. This article deals with an analysis of wool samples from 123 Merino stud rams belonging to different breeders. 67·5 per cent. of samples of ram's wool was found to be of medium quality. The article does not lend itself to abstraction and should be consulted in the original by those interested in the subject, as it consists mainly of tables giving the results of analyses of fibre thickness, crimping, etc.—E. M. ROBINSON.

I. JENSEN, V., & JENSEN, Elsa. (1933). **Determination of the Phenol Coefficient of Disinfectants by the Cover-Slip Method.**—*J. Hyg. Cambridge.* **33.** 485-494.

II. JENSEN, V., & JENSEN, Elsa. (1933). **Determination of the Phenol Coefficient of Disinfectants after the Cover-Slip Method.**—*Acta path. et microbiol. scand.* **10.** 241-260. 9 tables. [19 refs.] [Orig. in English].

III. JENSEN, V., & JENSEN, Elsa. (1933). Ueber die Bestimmung des Phenolkoeffizienten von Desinfektionsmitteln nach der Deckglasmethode. [**Estimation of the Phenol Coefficient of Disinfectants by the Cover-Slip Method**]. —*Zlb. Bakt. I.* (*Orig.*) **130.** 144-157. 10 tables. [19 refs.]

IV. MCCULLOCH, E. C. (1933). **The Germicidal Efficiency of Sodium Hydroxide.** *J. Bact.* **25.** 469-493. 7 figs., 8 tables. [29 refs.]

V. DOUGLAS, R. G., & BIRKHAUG, K. E. (1933). **Metaphen. II. Its Experimental Evaluation as an Antiseptic and Disinfectant.**—*J. Infect. Dis.* **53.** 71-75. [4 refs.]

I. II. & III. The authors put forward an alternative method to the Rideal and Walker technique for the standardization of disinfectants. They suggest that *Staphylococcus aureus* should be used as the test organism, since it is more resistant to disinfectants and less dangerous to work with than *Bact. typhosum*. The technique is as follows :– a suspension of *S. aureus* in a few c.c. of normal saline is made from a 24-hour agar slant culture and filtered. A loop-full of the bacterial suspension is placed on each of a series of cover-slips (12 mm. square) and dried at 37°C. for half an hour. A series of tubes containing 1 : 55, 1 : 60, 1 : 65 and 1 : 70 dilutions of phenol and a second series of tubes containing dilutions of the disinfectant to be tested are placed in a water-bath at 20°C. The cover-slips of dried culture are then placed in the various tubes for two minutes, washed, placed in veal broth and

incubated at 37°C. for 48 hours. The phenol coefficient is the ratio between the highest dilution of disinfectant divided by the highest dilution of phenol that kills *S. aureus* in two minutes.

IV. It was found that a 1 : 800 solution of sodium hydroxide had a better germicidal action than a 1 : 100 solution of phenol on cultures of *Br. abortus*. A 1 : 150 solution of commercial sodium hydroxide was, therefore, used to disinfect barns which had been previously infected with *Br. abortus*. Later *Bact. coli* was used as the test organism since it was found to be more prevalent in barns and more resistant to disinfectants than *Br. abortus*. In no case could Gram-negative non-sporulating rods be recovered from an area which had been disinfected. A 1 : 150 solution of commercial sodium hydroxide appears to retain its ability to destroy organisms even after prolonged contact with organic material, and it is not affected by changes in temperature between 20° and 25°C.

V. Aqueous solutions of metaphen exercise an antiseptic action against virulent strains of pneumococci and streptococci in extremely high dilutions, but a 1 : 4,000 dilution of metaphen in defibrinated human or rabbit blood failed to inhibit the growth of *Streptococcus haemolyticus*.—J. A. NICHOLSON.

POISONS AND POISONING.

I. QUIN, J. I. (1933). **Studies on the Photosensitisation of Animals in South Africa. I. The Action of Various Fluorescent Dyestuffs.**—*Onderstepoort J. Vet. Sci. & Anim. Indust.* **1.** 459-468. 5 figs. [9 refs.]

II. RIMINGTON, C., & QUIN, J. I. (1933). **Studies on the Photosensitisation of Animals in South Africa. II. The Presence of a Lethal Factor in Certain Members of the Plant Genus** *Tribulus*.—*Ibid.* 469-489. 1 table. [18 refs.]

III. QUIN, J. I. (1933). **Studies on the Photosensitisation of Animals in South Africa. III. The Photodynamic Action of** *Hypericum ethiopicum var. glaucescens* **Sond. and** *Hypericum leucoptychodes* **(Syn.** *H. lanceolatum* **Lam.). IV. The Toxicity of** *Lopholaena coriifolia* **(Harv.) Phill. & C.A.Sm.** (*L. randii* **sp. Moore). V. The Toxicity of** *Lippia Rehmanni* **(Pears) and** *Lippia pretoriensis* **(Pears). VI. The Effect of Surgical Obstruction of the Normal Bile Flow.**—*Ibid.* 491-496, 497-499, 501-504 and 505-526. 27 figs., 2 tables. [32 refs.]

I. This paper records a series of attempts to produce photosensitization with fluorescent dyes, in order to study the condition in relation to "geeldikkop" in sheep. Merino sheep and goats were used. Eosin, erythrosine and bengal rose produced marked photosensitization in each case when the animal was exposed to strong sunlight. Dyestuffs of the anthracene group did not produce the condition. Of the acridine group, acriflavine produced a transitory photosensitization. Methylene blue produced the condition accompanied by haemolysis. Thionine blue and methylene violet were similar in their effects. No general icterus was observed as in "geeldikkop."

II. In the fresh juice of green *Tribulus* plants and watery extracts of dried plants there is a lethal factor for sheep, causing death from the rapid intracorpuscular change from haemoglobin to methaemoglobin. The agent responsible is an inorganic nitrite. It is not present in the plant but is produced by enzymic oxidation reduction. Methods are described for the determination of nitrate in *Tribulus* material.

III. Dried pulverized *Hypericum ethiopicum* drenched to sheep caused intense photosensitization. From the dried plant a deep red fluorescent pigment was

obtained, which caused marked photosensitization in sheep. No icterus occurred. *H. leucoptychodes* causes a much weaker and delayed photosensitization.

IV. *Lopholaena coriifolia* (Harv.) produced acute poisoning in some cases in sheep, but the symptoms did not resemble those of true "geeldikkop." The plant contains an active liver poison producing marked fatty changes.

V. Powdered *Lippia Rehmanni* produces definite photosensitization with icterus. *L. pretoriensis* produced similar results but only in much smaller quantities. 400 g. of the former plant killed a sheep.

VI. This paper describes a series of bile obstruction experiments carried out on sheep to throw light on the genesis of icterus and photosensitization in true "geeldikkop" caused by *Tribulus*. The surgical procedures involved are described. Clinical icterus only occurred several days after operation and photosensitization developed within a week and, as a rule, lasted for several days. A progressive loss of condition up to extreme emaciation was noted. In addition to the bile obstruction, various other factors which might influence the production of icterus were studied.—E. M. Robinson.

Curasson, G. (1934). Alopécie formaldéhydique chez le Boeuf. [**Alopecia in the Ox caused by Formaldehyde**].—*Bull. Acad. vét. France.* **7.** 254. [2 refs.]

Having observed a few cases of alopecia in cattle following anti-rinderpest immunization with a formalinized vaccine, the author injected 5 to 12 c.c. of formalin (1 : 100), half intravenously and half subcutaneously, into eight young cattle. Three days later one of these animals became covered with cutaneous plaques which were followed by generalized alopecia. The author says that this reaction to formalin is not common in cattle, but that it may occasionally occur after the use of formalinized biological products.—J. E.

PHYSIOLOGY.

Mönnig, H. O., & Quin, J. I. (1933). **Studies on the Alimentary Tract of the Merino Sheep in South Africa. I. Investigations into the Physiology of Deglutition.**—*Onderstepoort J. Vet. Sci. & Anim. Indust.* **1.** 117-133. 23 tables. [3 refs.]

"This paper is the first of a series of 'Studies on the Alimentary Tract of the Merino Sheep in South Africa.' The staff of Onderstepoort, realising the tremendous importance of an exact knowledge of all matters relating to the alimentary tract of the sheep, have drawn up a comprehensive programme which includes embryology, anatomy (macro- and microscopic), physiology (physical and chemical), bacteriology and protozoology, to be studied on sheep of all ages under normal conditions, abnormal dietary conditions and pathological conditions due to worm infection and other causes."

In this first experiment the authors set out to test the accuracy of Wester's oesophageal-groove reflex theory on sheep, with the object of finding a simple way of administering solid drugs direct to the abomasum. They employed the method of dosage followed by slaughter, using various red dyes to show the destination reached. The numerous experiments, including those carried out on 264 sheep, gave very variable results and no definite conclusions could be drawn. Closure of the oesophageal groove is influenced by such factors as preliminary dosage with sodium salts, a condition of relative starvation and the moisture content of the food in the rumen.—J. E.

I. Küst, & Struck, M. (1934). Untersuchungen über die Sexualhormonausscheidung im Harn und im Blute tragender Sauen. [**Excretion of**

Sexual Hormone in Urine and Blood of Pregnant Sows].—*Deuts. tierärztl. Wschr.* **42.** 54-56. 3 tables. [22 refs.]

II. —. (1934). **The Sex Hormones.**—*Lancet.* **226.** 250.

III. Bond, C. J. (1933). **"Hormones and Genetics" being a Consideration of Some of the Factors concerned in the Response made by Certain Tissue Cells to Hormonic Influences.**—*Brit. Med. J.* Dec. 9th. 1085-1086. [8 refs.]

I. Examination of the urine of pregnant sows reveals the fact that from the 24th to the 32nd day of gestation 1,000 to 2,000 mouse units of oestrin per litre of urine are excreted. Previous to and after this period no hormone can be detected in the urine until the 11th to the 12th week of pregnancy, when 1,000 to 4,000 mouse units per litre are excreted. Shortly before parturition the amount excreted falls rapidly and disappears a few days afterwards. At no time during pregnancy was oestrin demonstrated in the blood, nor could prolan be demonstrated in the blood or urine.

II. Three reviews of published work on the relationship of the anterior hypophysis and the ovaries have been given since 1929 by Fluhman [*Amer. J. Obstet. & Gynecol*]. The reviews are intended to make it possible to obtain a good idea of the directions in which work is proceeding.

III. In the case of diabetics and cretins, for example, injections of the correct hormones will restore them to normal health, but they do not remove the diseased condition from which the patients are suffering. Since these conditions are to a certain extent hereditary, unless steps are taken to prevent the handing on of the disease, unfortunate results from the racial point of view may arise.

In some cases it is difficult to explain the asymmetric distribution of the secondary sex characters by a hormonic secretion circulating equally on both sides of the body, and it appears that there must be some difference in the capacity of the tissue cells to react to the hormonic stimulus.—J. A. Nicholson.

I. Dodds, E. C. (1934). **The Hormones and their Chemical Relations. Lectures I, II & III.**—*Lancet.* **226.** 931-935, 987-992 and 1048-1054. 22 figs., 2 tables. [123 refs.] [The Goulstonian Lectures, delivered before the Royal College of Physicians, London, in March].

II. Cook, J. W., Dodds, E. C., Hewett, C. L., & Lawson, W. (1934). **The Oestrogenic Activity of some Condensed-Ring Compounds in Relation to their Other Biological Activities.**—*Proc. Roy. Soc. London. Ser. B.* **114.** 272-286. 4 tables. [34 refs.]

III. Cook, J. W., Dodds, E. C., & Greenwood, A. W. (1934). **Sex Change in the Plumage of Brown Leghorn Capons following the Injection of Certain Synthetic Oestrus-Producing Compounds.**—*Ibid.* 286-290. 1 plate, 1 table. [6 refs.]

I. At present it is considered that the anterior lobe of the pituitary produces :– (1) growth hormone ; (2) prolan (A and B) ; (3) thyrotropic hormone ; (4) pancreaticotropic hormone ; (5) adrenotropic hormone and (6) parathyrotropic hormone.

The main functions of prolan are to initiate the maturation of the follicle and the formation of the corpus luteum, and also to stimulate the testes to produce the male sex hormone. The ovaries having been stimulated by prolan in their turn elaborate oestrin. Similarly, the thyrotropic hormone stimulates the thyroid to produce thyroxine. Until the exact point of action of the various hormones can be determined, it is impossible to have a complete understanding of the changes which they produce in the animal body.

II. An examination was undertaken of a series of substances chemically

related to the oestrogenic hormone, in an attempt to elucidate the molecular conditions necessary for oestrogenic activity. Hydrogenated phenanthrene derivatives containing oxygen in the molecule all appear capable of producing oestrum, so that this lack of specificity must modify the conception of the phenomenon of oestrum.

III. The authors injected into capons a number of condensed carbon-ring compounds but they were unable to show that the substances possess comb-growth stimulating activity. Certain of them, however, produce a tendency for the feathers to appear more like those of female birds.—J. A. NICHOLSON.

I. —. (1933). **Oestrogenic Hormones.**—*Nature.* **132.** 609-610. [11 refs.]
II. —. (1933). **Synthetic Oestrogenic Compounds.**—*Ibid.* 719-720. [4 refs.]
III. TSUCHIMOTO, S. (1933). **Relation between the Endocrine Glands and the Oestrus Cycle. I. Experimental Study on the Relation between the Function of the Anterior Lobe of Pituitary Body and the Appearance of Oestrus Cycle.**—*Jap. J. Exp. Med.* **11.** 129-151. 14 text figs., 6 figs. on 1 plate, 11 tables. [23 refs.] [Orig. in English].

I. An account is given of the oestrogenic substances isolated by various workers. The oestrin molecule appears to consist of a partially hydrogenated phenanthrene ring system with a five-membered ring fused on to it. Trihydroxyoestrin, emmenin and theelol appear to be identical substances and it is to be hoped that in future the more extended use of the international standard [this *Bull.* **4.** 281.] will assist in the identification and differentiation of this group of compounds.

II. It has been recently shown that the molecule of a highly active oestrogenic substance is very similar to that of certain carcinogenic hydrocarbons. Further, certain of these carcinogenic hydrocarbons also possess the power of inducing oestrum, but there is no evidence that they can arise from oestrin in the body. Calciferol, ergosterol and neo-ergosterol are capable of inducing oestrum when injected in large quantities and there appears to be a connection between carcinogenesis, certain phenomena of sex and vitamin D activity.

III. Transplantation of the anterior lobe of the pituitary body of a pig into immature rats caused a typical oestral cycle to appear two to four days after operation. The actual size of the genital organs remained the same as in untreated animals. Transplantation of this body into adult rats produced no increase in the number of ova discharged, nor did it prevent the retrogression of the genital organs after ovariectomy.—J. A. NICHOLSON.

I. KOCH, W. (1933). Experimentelle Untersuchungen über die Brunst der Hündin. [**Research Work on Oestrum in the Bitch**].—*Münch. tierärztl. Wschr.* **84.** 551-553.
II. WAGNER, H. (1934). Mikroskopische Bruntschleimuntersuchungen bei einer Stute unter besonderer Berücksichtigung des Leukozytenbefundes. [**Microscopic Oestral Mucus Tests in a Mare with Reference to Leucocytes**]. —*Deuts. tierärztl. Wschr.* **42.** 134-136. [4 refs.]
III. FREI, W. (1934). Zur Aetiologie und Benennung von Brunstanomalien. [**Aetiology and Nomenclature of Oestral Disorders**].—*Berl. tierärztl. Wschr.* **50.** 113-114.

I. The author has tried the effect of injections of hormones into a series of bitches. The main objects of the experiments were to determine whether it is possible to induce oestrum by means of hormones and, secondly, whether it is possible to influence the course of oestrum once it has begun.

It was found that large doses of oestrin (folliculin) failed to induce the onset of oestrum, but that medium doses of prolan induced the first stage of oestrum.

Full oestrum, however, could not be induced by further doses of prolan or by the combination of prolan and oestrin, and it is suggested that some other factor comes into play at this stage. Oestrin given to bitches during the second stage of a normal oestrum increased the intensity and shortened the duration of this stage.

II. Examinations of smears of the vaginal secretion of mares showed that in the majority of cases white blood corpuscles are absent, or present only in small numbers, at the time of oestrum, whereas they are prevalent in large quantities from the end of one oestrum to the beginning of the next. The appearance of leucocytes in large numbers at the time of oestrum indicates a catarrhal inflammatory process of the genital organs and service should not be permitted.

III. Irregularities in the female sexual cycle are most easily recognized by an upset of the periodicity, intensity or quality of the oestral flow. The onset of oestrus is mainly regulated by the hormones secreted by the anterior pituitary and the corpus luteum, and the length of the oestral period by the secretion of oestrin. An upset in the secretion of any of these hormones will, therefore, cause irregularities in the sexual cycle. For example, the periodicity of oestrus is upset by the failure of the hormones produced by the anterior pituitary to neutralize the hormone produced by the corpus luteum and *vice versa*. Similarly, the secretion of oestrin by immature follicles or delayed ovulation lengthens the oestral period. Where such irregularities are present, the total length of the sexual cycle remains unchanged, but irregularities in the different periods of the cycle become apparent.

The author suggests a suitable terminology based on words of Greek origin for the conditions described.—J. A. Nicholson.

TECHNIQUE.

I. Voss, B. (1933). Tuberkulinkanyle med Bajonetansats. [**Tuberculin Syringe with Bayonet Fitting**].—*Med. dansk. Dyrl.* **16.** 442-443.

II. Ammitzbøll, H. (1933). Et Tuberkulinmaal. [**A Tuberculin Test Skin Caliper—including a Description of a Special Syringe**].—*Ibid.* 489-491. 2 figs.

I. The author describes a 1 c.c. " Record " type syringe capable of delivering graduated doses and having a bayonet type attachment for the needle, which is provided with a reinforced boss. The syringe is made to the author's design for the purpose of tuberculin testing by the intradermal method.

II. This author describes a skin caliper of the sliding arm type, graduated in millimetres : special attention has been paid to its construction so that it may be easily and accurately applied by one hand.

Ammitzbøll also describes a special syringe similar in principle to that of Voss for use in connection with the intradermal tuberculin test.—J. E.

I. Kernkamp, H. C. H. (1933). **Results in the Use of Fresh and Oxalated Blood of Swine when making Cellular Counts and Hemoglobin Determinations.**—*J. Amer. Vet. Med. Ass.* **83.** 666-672. 1 fig. [2 refs.]

II. Kuhn, W. R. (1933). Ueber Wirkung und Anzeige der Bluttransfusion bei den grossen Haustieren. [**Blood Transfusion in the Large Domestic Animals**].—*Berl. tierärztl. Wschr.* **49.** 661-667. [76 refs.]

I. In the course of experimental work on the blood of healthy and anaemic swine, the author investigated the value of delayed blood examination when anticoagulants are used.

He compared the haemoglobin value, the erythrocyte count and the total and

differential leucocyte counts, at the 5th, 24th and 48th hours, with those made at the time of collecting the blood. 0·03 c.c. of a 20 per cent. solution of potassium oxalate was evaporated over a bunsen in the bottom of clean glass tubes into which 1 to 1·5 c.c. of blood was drawn. Up to the fifth hour, the average variation in the erythrocyte and total leucocyte counts was within the normal range of variation.

With delayed examination, values significantly greater or less than those with fresh blood were obtained. With increasing delay there was a tendency for the haemoglobin value and the relative percentage of lymphocytes to increase and the total number of red and white cells per c.c. and the relative percentage of polymorphs to decrease.

II. The author gives a review of the literature on this subject, referring particularly to the recorded use of blood transfusion in various affections of domestic animals. He points out the risk which attends the transfusion of blood from a member of one species to that of another.

Blood transfusion has been found effective in cases of haemorrhage, either spontaneous or of traumatic origin and is of value because in addition to replacing the lost blood the haemorrhage is stopped. It is beneficial in many other instances, such as in cases of purpura haemorrhagica in cattle, myoglobinuria paralytica in horses, anaemic conditions, septicaemias and in bovine coccidiosis, but in these cases it should be employed together with other therapeutic measures.—N. S. Barron.

I. Goldie, H. (1933). Recherches sur la coloration du sang et de ses parasites. **[Staining of Blood and Blood Parasites].**—*Bull. Soc. Path. exot.* **26.** 1028-1031. [3 refs.]

II. Jensen, V. (1933). **Notes on Staining of Bacteria.**—*Acta path. et microbiol. scand.* Suppl. 16. 180-182. 1 fig. [Orig. in English].

III. —. (1934). **Standardization of Biological Stains.**—*Brit. Med. J.* Feb. 3rd. 205.

IV. —. (1934). **Microscopical Stains Old and New.**—*Lancet.* **226.** 310.

V. Taniguchi, T., Hosokawa, M., Kuga, S., & Fujino, T. (1934). **A New Method of Staining Viruses of Variola-Vaccinia and Varicella, and the Nature of Cell-Inclusions in Virus Diseases.**—*Jap. J. Exp. Med.* **12.** 91-99. 10 figs. on 4 plates. [5 refs.] [Orig. in English].

I. A previous report [this *Bull.* **4.** 292.] showed that a mixture of flavine and eosin stains intensely the azurophil inclusions of haematozoa and of leucocytes in preparations previously treated with a solution of methylene blue. The flavine here takes the place of the azure present in the Romanowsky stains. Flavine and azure have a similar chemical structure. Both act by being vectors to the eosin.

A third substance, pyronine, is similar in structure and action to these two. The pyronine-eosin compound, however, is soluble in water, whereas the flavine-eosin compound is soluble only in alcohol or acetone.

II. (a) The author found that Levaditi's silver nitrate method for spirochaetes gives good results in the staining of *Actinomyces necrophorus* [*B. necrosis*]. The reducing fluid used was pyrogallic acid, 36 g., distilled water, 900 c.c., acetone, 100 c.c. The fluid must be changed after 24 hours and the tissues then allowed to stand in the fluid for two to three days.

(b) Good results were obtained by the use of the following method :– (1) 1 per cent. watery solution of methyl violet 6B for two to three minutes ; (2) blot with filter-paper ; (3) two to three minutes in picroeosin (0·25 g. oxide of magnesia is added to 100 c.c. 0·5 per cent. watery solution of picric acid); boil, cool and filter. Mix with 5 c.c. of 1 per cent. watery solution of eosin BA and with 0·5 c.c. " phenol

liquid "); (4) blot with filter-paper; (5) picroaniline (i.e. aniline containing a little picric acid) until the preparations are light pink in colour; (6) rinse with xylol and (7) mount in xylol-dammar resin. This gives more permanent specimens than the Jensen modification of Gram's method.

(c) An easy and good method of capsule staining is given, viz., without fixation the smears are stained for a few seconds with a mixture of Ziehl-carbolfuchsin and 1 per cent. watery acetic acid (proportions not given). They are then rinsed in water and dried.

III. & IV. Both these papers refer to the work done by a committee appointed by the Royal Microscopical Society and supported by representatives from a number of other societies, to consider the standardization of biological stains and staining materials manufactured in this country. Standard specifications for methylene blue, acid fuchsin and eosin and xylol for microscopic purposes are under consideration.

V. Fix air-dried smears in pure methyl alcohol, 100 c.c., formalin, 5 c.c., and glacial acetic acid, 1 c.c., for two minutes, wash carefully in water, flood with 1 per cent. eosin and apply heat until steam rises for half to one minute, wash carefully, stain with Giemsa solution, 1 drop to the c.c. or, better, with eosin methylene blue, 4·0 g., azure I, 0·8 g., crystal violet, 0·05 g., dissolved in 500 c.c. of equal parts of methyl alcohol and glycerine, 1 c.c. of the mixture being diluted in 50 c.c. of distilled water; stain for 30 to 40 minutes or longer at room temperature, wash, dry and examine.

The authors also obtained good results with Altmann's method for mitochondria and with Heidenhain's iron haematoxylin method.—A. BROWNLEE.

HARRISON, L. W. (1934). **The Use of Capillary Tubes for Transport of Specimens from Cases of Suspected Venereal Disease.** [Correspondence]:—*Lancet.* **226.** 156-157. [Copied *verbatim* from *Bull. Hyg.* **9.** 390. Signed by L. W. HARRISON].

The author draws attention to an old recommendation of his to send specimens of secretion for examination by the dark-ground method in capillary tubes. The method does not seem to have gained much popularity, and sometimes the author has found that practitioners have feared that on arrival at the laboratory the specimen would not be reliable. Any doubt on this score should be settled by the results of an experiment initiated by DR. A. L. MACNABB, G. MATTHEWS and A. D. MCCLURE, Department of Health, Ontario, in which specimens originating in the V. D. Department, St. Thomas's Hospital, had crossed the Atlantic four times, twice in capillary tubes and twice on slides with cover-slips sealed at their edges with wax. Motility had been observed in the spirochaetes travelling under these conditions for 80 days, 71 days, 68 days and 46 days respectively. The author remarks that the time during which motility was preserved appears to have been the longest ever recorded. He suggests also that a capillary tube would be a good vehicle for transport of discharge for cultivation of the gonococcus, as in such conditions it had been found by T. E. OSMOND to be alive after five days at room temperature or in the ice-chest.

OFFICIAL AND OTHER REPORTS.

——. (1934). **Conference on Co-Ordination of Veterinary Research. Held at Kabete, 6th to 10th January, 1934.**—*Conferences of Governors of British East African Territories.* pp. 80. Nairobi: Govt. Printer. [4to].

This conference was attended by the heads of the administrative and research sections of the veterinary departments of Uganda and Kenya, medical representatives of the same territories and a veterinary research officer from Tanganyika. The Governor of Kenya, in opening the conference, said that it was one of a series of research conferences which had been arranged by the conference of East African governors, as they considered that such meetings were necessary for the discussion and co-ordination of research programmes in order to prevent overlapping. It was not the intention that any institute or colony should be debarred from pursuing any particular line of research, but rather that the work of different institutes should be so co-ordinated that it should be complementary and steadily progressive, so as to cover the greatest amount of ground consistent with thoroughness. His Excellency also pointed out that, from the point of view of administrators who sought stability, scientific progress was so rapid that it introduced a disturbing factor, and that the conference would be of great assistance to the governors if it could clarify the position in regard to the more recent progress, particularly the new methods of immunization against rinderpest, and their range of utility under the varying conditions in the different territories.

The conference discussed the position which had been reached in regard to the most prevalent stock diseases, the research programmes already formulated, the extension of these programmes which seemed indicated and the organization required to give the maximum of co-ordination and efficiency to the veterinary research services.

Virus Diseases.

Rinderpest.—The discussion was mainly concerned with methods of immunization. It was recorded from Kenya that inactivated vaccine gave an immunity to contact infection for 15 months, whilst the vaccine-virus method, tested on a small number of cattle, had conferred complete immunity up to five years. In discussion on the programmes of research, it was mentioned that encouraging results had been obtained in preliminary attempts to cultivate the virus and that experiments indicated that redwater, occurring during the rinderpest reaction, was due to an infection in the blood used as virus, rather than to a breakdown of immunity. The conference agreed that, in the East African territories, rinderpest policy should be directed towards eventual eradication of the disease, and it was recommended that, where reasonable protection from risk of re-invasion can be given and where re-immunization can be carried out rapidly and efficiently, cattle may be immunized by one of the temporary methods ; but that, when these conditions cannot be fulfilled, the ideal method would be wholesale permanent immunization, either by double inoculation or, preferably, by the vaccine-virus method.

Horse-Sickness.—It was recorded that in Kenya a formolized horse-sickness vaccine was prepared for routine use in the field, but that the inoculation with virus following vaccination was discouraged as, owing to individual idiosyncrasies, occasional animals failed to withstand the virus inoculation. A neurovirus had been established in mice, and it was hoped that after repeated passages this virus might become attenuated for the horse.

Rabies.—The disease in Kenya is said to be the same as the classical rabies of workers in Europe. The jackal appears to be the only important host apart from domesticated dogs, but observations are being maintained for any atypical form of the disease which might occur in Viverridae.

Foot and Mouth Disease.—A commencement has been made with the investigation of the types of the local strains of this disease.

Contagious Bovine Pleuro-Pneumonia.—Success in the eradication of this disease was recorded from Uganda and parts of Kenya by the slaughter of affected animals, vaccination of in-contacts and the rigid application of quarantine measures. From Kabete, it was recorded that it had not been possible to recover virus by cultivation from animals with sequestra which had been killed three to five months after reacting to intrajugular inoculation of virulent lymph enclosed within emboli of agar.

Other Virus Diseases.—Rift Valley fever, Nairobi sheep disease, heartwater and bluetongue were discussed and work on the transmission by invertebrate vectors recorded. It was observed that Kabete was the only institute where any large-scale investigation of the indirectly transmitted virus diseases was being attempted.

Bacterial Diseases.

Br. abortus infection, haemorrhagic septicaemia, calf paratyphoid and tuberculosis were also discussed and it was recorded that in some markets in Uganda 50 per cent. of carcasses had been found infected with tuberculosis, the lesions being generally confined to the lymphatic glands.

From the discussion of poultry diseases, it is interesting to note that, although *Bact. sanguinarium* infection [fowl typhoid] is prevalent, only one outbreak of *Bact. pullorum* infection [bacillary white diarrhoea] had come to the notice of the Kenya laboratory and that that had been traced to carrier hens which had been imported from England. Experiments with different types of vaccine for fowl typhoid showed the superiority of those consisting of attenuated living organisms. On farms where regular vaccination was practiced the disease never made its appearance.

Protozoan Diseases.

East Coast fever, redwater, anaplasmosis and canine piroplasmosis came under discussion.

Metazoan Diseases.

Considerable attention was paid to measles in cattle and pigs, the incidence of which is steadily increasing and which could prove a serious handicap to any attempt to promote an export trade in beef. It was considered that every possible step should be taken to reduce the incidence by education in sanitation, by anthelmintic treatment of infested natives and by research on methods of dealing with infested carcasses. It was pointed out that if a too rigid standard of inspection were enforced, in many areas it would lead to the killing of animals on premises which were not under inspection.

Diseases General.

" Snotsiekte."—A transmissible disease resembling true " snotsiekte " was reported from Kenya. It appeared that wildebeeste could not be incriminated in these outbreaks and that another species of wild ruminant might be involved.

Sterility in cattle was discussed, and it was remarked that in Kenya contagious abortion did not appear to be frequently implicated, but that a form of sterility existed which commonly assumed the characters of a contagious disease and which was associated with a granular vaginitis.

One case of neurolymphomatosis had been encountered in an imported cock.

The conference approved of the principle of the centralization of veterinary research and considered that Kabete provided the best centre for an institute. An appreciation of the work performed by the late Veterinary Adviser to the Secretary of State for the Colonies in the co-ordination of research work was expressed, with an earnest hope that the appointment would be re-established. A reservation is

made by the Director of Medical Services, Uganda, who advocated the formation of a central research fund to be controlled by a central representative committee rather than the centralization of research in any one building.

—U. F. RICHARDSON.

IRISH FREE STATE. (1934). **Second Annual Report of the Minister of Agriculture 1932-33.** pp. v + 145 + [70]. Dublin: Stat. Office. [8vo] [2s. 3d.]

The sections of veterinary interest in this report are as follows :–

VETERINARY COLLEGE OF IRELAND. [pp. 28-36 and p. [25] in appendix]. The number of students was 76 and seven graduated during the year. The rest of this section deals with the results of diagnostic work, chiefly with poultry diseases, and the incidence of these diseases as estimated from the returns. Bacillary white diarrhoea and coccidiosis head the list of infectious diseases as based on the year's work and tuberculosis is third. Contagious disease was diagnosed in over 25 per cent. of dead birds examined. Fowl plague is unknown and fowl cholera has not been seen for many years.

VETERINARY RESEARCH LABORATORY. [pp. 70-71]. This section gives the results of the year's work in diagnosis, the preparation of vaccines and research into bovine and porcine tuberculosis and contagious abortion [no details].

VETERINARY DISPENSARY SCHEME. [p. 98]. This scheme was started in 1910 for the purpose of giving veterinary advice and treatment to poor people for small fees. There are now 35 in existence; over 3,000 cases were treated during the year.

DISEASES OF ANIMALS (IRELAND) ACTS, 1894-1932; DOGS ACT, 1906; POULTRY ACT, 1911. [pp. 113-116]. This section gives a brief description and a record of the more important diseases of stock. The incidence of swine fever was greatly in excess of that for the previous year. Mange was found in four horses and in four head of cattle. 4,000 cases of bovine tuberculosis were notified and 210 outbreaks of sheep scab occurred. No case of anthrax was observed.

There was an embargo on the importation of cattle into the Irish Free State, in order to prevent the introduction of foot and mouth disease.—J. E.

SOUTHERN RHODESIA. (1934). **Report of the Chief Veterinary Surgeon for the Year 1933.** [HOOPER SHARPE, G. C.] pp. 7. Salisbury: Govt. Printer. [fcp].

Mr. SINCLAIR retired at the end of the year after 28 years service as Chief Veterinary Surgeon and Mr. Hooper Sharpe is acting C.V.S. in his place.

EAST COAST FEVER was limited to ten farms in the Melsetter district. An intensive effort is being made to eradicate the disease by the posting of additional cattle inspectors and by the formation of a vigilance committee by local farmers.

FOOT AND MOUTH DISEASE had disappeared at the end of 1932 and no fresh cases were observed in 1933. There were outbreaks in Bechuanaland and Barotseland, but so far the spread of the disease into Southern Rhodesia had been prevented by appropriate police methods.

There are brief notes on other diseases, none of which had a serious incidence.

—J. E.

BRITISH GUIANA. (1934). **Department of Agriculture, Report of the Livestock Division for the Year 1932.** [BONE, T.]—*Div. Reps. Dept. Agric. British Guiana. 1932.* pp. 143-147. Georgetown: Govt. Printer. [fcp].

ANIMAL HUSBANDRY.—The position was rather backward and attempts to grade up indigenous cattle met with little success. Also, there is little financial gain to be won by stock improvement, as the prices of produce are so low. The

Rupununi Development Company imported four Hereford bulls, previously immunized against piroplasmosis and anaplasmosis in England.

An important factor in the cattle industry are the Rupununi inland savannahs, consisting of 7,000 square miles of open land suitable for livestock rearing and the now well-organized cattle trail connecting this area with the coast. It is 180 miles long and passes through forest land for 140 miles before reaching the coastal plain. Unfortunately there is evidence of phosphorus deficiency in the Rupununi area. Research on suitable grasses for wide sowing is making progress.

There is a small stock farm attached to the division.

A new model abattoir was built at Georgetown. Pig and poultry breeding made progress.

ANIMAL HEALTH.—An outbreak of what is believed to be rabies in cattle occurred in the Rupununi district and was investigated with the aid of some Brazilian veterinarians. Some material was sent to Trinidad for examination, but no official report is yet ready. The disease is described as follows :–

" ' The sick animal leaves the herd. At this time, before any other sign of disease is shown, the temperature was found to be 103·4°F. The animal grazes slowly and intermittently. It is very depressed. It is not aggressive and takes little notice of horses or men on foot. Unlike a normal range animal, it is easily captured. When lassoed it stands still – it is too sick to move. Later, saliva dribbles from the mouth ; at first this is not continuous. The animal rubs its neck and withers against trees or ant-heaps. Inco-ordination of movement follows with slight tremor of the flank muscles. The inco-ordination of movement is not continuous ; after a brief time the animal regains control and can be driven gently. When driven in this manner, the animal will travel one-quarter to half a mile and will then sink to the ground as if completely exhausted only to recover completely in one or two minutes. Switching of the tail is more or less continuous.

" ' When taken into a water hole the animal attempts to drink but is unable to swallow.

" ' When left to itself the animal stands for long periods and if near a tree or ant-heap will rub its neck and withers at intervals. It faces the wind with extended neck. For very brief moments it lies down.

" ' The disease progresses rapidly ; dribbling of saliva becomes continuous. The animal is unable to drink and makes no attempt to graze. Movement becomes more difficult. The sight is affected ; only moving objects are seen. The temperature becomes sub-normal. The animal lies down and dies quietly in from 36 to 72 hours after the onset of symptoms.'

" So far as could be ascertained the cattle which died were of either sex between 3 or 4 years of age or older. No sick calf was seen and no carcass of a calf was found.

" A peculiar feature of the outbreak was that most of the carcasses found were on the land usually occupied by the herds when resting at night ; the wanderings of a rabid animal are usually aimless.

" *Post-Mortem Examination.*—A serous exudate was found under the skin of the neck and withers caused by the animals rubbing against trees or ant-heaps. The lesions constantly found were severe catarrhal inflammation of the epiglottis, larynx and trachea."

" Stiff-sickness " was observed in a number of cattle waiting for export.—J. E.

MAURITIUS, COLONY OF. (1933). **Annual Report of the Veterinary Division [for 1932]**. [LIONNET, F. E.]—*Ann. Rep. Dept. Agric. Mauritius. 1932.* pp. 41-43. Port Louis : Govt. Press. [8vo].

CONTAGIOUS DISEASES.—*Trypanosoma evansi* infection [surra] was diagnosed in three equines, which were destroyed according to regulations, and in 24 cattle, which were treated with " atoxyl " and arsenious acid.

Out of 133 cattle submitted to the subcutaneous tuberculin test for tuberculosis, three reacted and were destroyed. Nearly 1,500 cattle were vaccinated with BCG, which, it is claimed, is proving very beneficial in the control of the disease in the colony.

A serious outbreak of redwater [presumably piroplasmosis] in a herd of 60 cattle was successfully treated with trypan blue.

Among poultry diseases, reference is made to " infectious coryza " and fowl cholera.—J. E.

UNITED STATES OF AMERICA. (1933). **Report of the Chief of the Bureau of Animal Industry, 1933.** [MOHLER, J. R.] pp. 47. 25 tables. Washington : U.S. Govt. Printing Office. [8vo] [5 cents].

This report contains general information on the livestock industry and research into and control of animal diseases. The Bureau employs a total of about 4,400 persons of all grades. The chiefs of the various divisions are as follows :– Animal Husbandry, E. W. SHEETS ; Biochemic Division, M. DORSET ; Experiment Station at Bethesda, Md., W. E. COTTON ; Fowl Inspection Division, G. W. POPE ; Division of Hog Cholera Control, U. G. HOUCK ; Meat Inspection Division, R. P. STEDDOM ; Packers and Stockyards Division, A. W. MILLER ; Pathological Division, H. W. SCHOENING ; Tick Eradication Division, W. M. MACKELLAR ; Tuberculosis Eradication Division, A. E. WIGHT ; Division of Virus and Serum Control, D. I. SKIDMORE and Zoological Division, M. C. HALL.

Some parts of the report have been abstracted as separate articles and are to be found in their appropriate position in this issue of this *Bulletin.*

It is of interest to note that there are 11 veterinary colleges with about 1,400 students in the United States.

MASTITIS.—" Investigation of bovine mastitis was continued during the year. Principal attention was given to the methods for diagnosing the disease. These are the chlorine, the catalase, and the brom-thymol blue tests, the Breed count of tissue cells, palpation of the udder, use of the strip cup, and bacteriological examination of the milk from the individual quarters of the udder. A description of these methods was published. From the results obtained it appears that chronic or sublatent mastitis can be readily detected by the use of a combination of any two or three of these methods with the exception of the strip cup, which has not proved to be of much value as a diagnostic aid. The causative agent of the mastitis, however, can be ascertained only by bacteriological examination of the milk. The bacteria which have been definitely identified as causing mastitis are streptococci and micrococci. The use of bacterins in large doses alone or in combination with sterile milk, administered intradermically, subcutaneously, and intramuscularly, has not been observed to be of benefit."

DOURINE was eliminated from the only remaining infected area in the States – the San Carlos Indian Reservation – during the year.

ANAPLASMOSIS.—Research indicated that dogs are not susceptible to, nor are they carriers of, bovine anaplasmosis.

SWINE ERYSIPELAS.—The rapid whole-blood agglutination test has been tried and found reliable for diagnosis and, by work on experimentally infected pigs, it was found that agglutinins are detectable in the blood six days after infection, or three days after the onset of symptoms.

The vertebral lesions caused by swine erysipelas bacilli were also studied. It is considered that they are common in this disease.

Bacterium pullorum INFECTION [BACILLARY WHITE DIARRHOEA].—The stained antigen agglutination test was tried out on a large scale all over the country and found to be reliable. It is proposed to employ it in the future for routine work. Smooth strains of *Bact. pullorum* produced a better antigen than rough strains.

EQUINE ENCEPHALOMYELITIS.—Research work has shown that the following animals are experimentally susceptible :– horses, calves, pigeons, guinea pigs, white rats, white mice and rabbits. Sheep, chickens, cats and dogs resist intracerebral infection : guinea pigs have been successfully immunized by formalinized brain vaccine.

VESICULAR STOMATITIS.—The Bureau is maintaining two known types of virus in guinea pigs.

MANGE.—The eradication of sheep scab progressed. The position is favourable. Cattle mange is now confined to four states. Goat mange was still present in five large flocks in Texas. Horse mange was still present to a slight extent in Montana.

TICK ERADICATION.—The "cattle tick," *Boophilus annulatus*, the carrier of southern or tick fever, was declared eradicated from a further 20,000 square miles in Arkansas, Texas and Florida. Federal quarantine is now limited to parts of the above two latter states and Louisiana. Systematic dipping is the main point in eradication. Nearly 800 persons, including 391 veterinarians, supervised the dipping of 25 million cattle and over 2 million horses and mules during the year.

NASAL GRANULOMA has been studied in detail and the opinion is offered that it is a parasitic disease, although nothing is said about the presence or absence of a schistosoma.

POISONOUS PLANTS.—New information was obtained by experimental research on 16 plants : these included the genera *Actinea*, *Aleurites*, *Astragalus*, *Delphineum*, *Lupinus*, *Senecio*, *Nolina* and *Psilostrophe*.—J. E.

—. (1934). **Report of the Proceedings of the Thirty-Seventh Annual Meeting of the United States Live Stock Sanitary Association, Chicago, Ill., December 6-8, 1933.**—*J. Amer. Vet. Med. Ass.* **84.** 295-322. [2 refs.]

E. T. FAULDER, the president, gave a wide review of the livestock disease problem in the United States. The following points are of general interest :—

TUBERCULOSIS.—The great success of the eradication policy since its inauguration in 1917 is described. In 1918, 4 per cent. of all cattle in the United States were tuberculous and now the percentage is about 1·2 among 36 million cattle included in the accredited herds plan ; this number being considerably more than half the cattle in the United States. 1,700 counties are now accredited and 1,400 additional counties have a tuberculosis incidence not exceeding 1 per cent. New York State is still the most heavily infected, with a tuberculosis incidence of 13 per cent. as against 40 per cent. in 1918.

It is emphasized that the decrease in bovine tuberculosis has been reflected in the incidence of tuberculosis in human beings. Avian tuberculosis exists to a considerable extent and it is urged that this type should be included in the eradication scheme.

JOHNE'S DISEASE should also be dealt with by a similar plan.

BOVINE CONTAGIOUS ABORTION.—A number of states have recognized the importance of this disease and have introduced regulations for its control. It is supposed that at least 18 per cent. of all cattle in the United States are infected.

BOVINE MASTITIS.—It is suggested that the organization for the eradication of tuberculosis should include mastitis in its routine work. The slaughter policy for bad cases is favoured.

Bacterium pullorum INFECTION.—More than half the States have made a plan to control this disease by systematic blood testing.

SWINE ERYSIPELAS.—This disease is said to cause considerable loss.

FOOT AND MOUTH DISEASE.—Outbreaks occurred in the United States in 1870, 1880, 1884, 1902, 1908, 1914, 1924, 1925, 1929 and 1932. There are now strict regulations in force to prevent the risk of the introduction of infection from abroad.

SWINE FEVER.—FAULDER insists that serum and virus should be solely in the hands of veterinarians, and emphasizes the importance of sanitation in the control of all diseases of swine.

TICK CONTROL.—Eradication of the "cattle tick," *Boophilus annulatus*,

started in the year 1906 with the quarantine of 15 states, including 985 counties. By perseverance 896 counties have been cleared of the ticks, up to the end of 1932. The factors necessary for the success of a scheme of this description are enumerated.

—J. E.

HOLLAND. (1933). Verslag van de Werkzaamheden der Rijksseruminrichting door Dr. L. F. D. E. Lourens 1932. [**Report of the Imperial Serum Institute for 1932**]. [LOURENS, L. F. D. E.] pp. 70. 5 tables. Rotterdam : Stemerding & Co. [8vo].

The special report section [pp. 5-18] contains an account of an investigation into Aujeszky's disease of which 14 cases in cattle and pigs were diagnosed. The natural transmission of the disease is discussed and the possibility of flies as vectors is suggested. For diagnosis with rabbits, the subcutaneous route of inoculation is preferred to the cerebral route in order to produce the characteristic pruritus. Disinfection trials with a virus suspension showed that sulphuric acid (in a dilution of 0·5 per cent. in infected suspension) is instantaneously lethal ; " soda " solution kills it in 20 minutes, formalin (1·0 per cent.) in one hour and phenol only after a matter of weeks.

A broth culture of *Erysipelothrix rhusiopathiae* which had been kept for 17 years was found to be still viable, but had lost virulence for animals after ten years.

The diagnosis of *Br. abortus* infection by guinea pig tests and by culture is discussed and preference given to the latter method : progress in the preparation of culture media is reported. A good medium producing rapid growth was made from an extract from a lactating udder of a cow mixed with agar and ox serum.

Tests to speed up the agglutination test for *Bact. pullorum* (rapid method on glass plate) are reported, and advice on illumination and warming of the apparatus is given. The statistical figures of the diagnostic work show that less than 3 per cent. of the cases were positive.

The best way to vaccinate fowls against fowl pox is to rub a little vaccine [? fowl pox virus] into the skin and open feather follicles (after plucking a small area) with the cork of a bottle. It is said that 200 to 500 fowls can be treated per hour by this method, using 1 c.c. of vaccine for 10 to 15 birds. It is advisable to vaccinate pullets before they reach the egg-laying age.

Nine cases of suspected laryngotracheitis turned out to be atypical fowl pox on investigation.

Lettuce and a lettuce product, lactucarium, were tested for curative properties in fowl paralysis (two, three and ten cases respectively), but the results were negative. An experiment to discover whether a virus is the cause was upset by an outbreak of coccidiosis in the test fowls.

Yoghurt as a remedy against coccidiosis was tested with inconclusive results and pH tests of the intestinal contents especially the caecal contents of treated birds showed that the reaction was more alkaline than in controls fed on grain.

The general section of the report [pp. 19-38] gives the figures of the routine diagnostic work and production of sera and vaccines of which a wide variety was made. The results are partly given in tables.

The Ambulatory Division records an outbreak of haemorrhagic septicaemia in cattle, poisoning of horses by mouldy oats and hay, paraplegia in four cows following the intravenous administration of a streptococcal vaccine and *Bact. enteritidis* Gärtner infection in cattle.

The remainder of the report deals with the bacteriological examination of water and milk, toxicological analyses, also analyses of foodstuffs and secret remedies.—A. KLARENBEEK (UTRECHT).

DUTCH EAST INDIES. (1934). Verslag van het Veeartsenijkundig Instituut over het jaar 1932. **[Report of the Veterinary Institute [Buitenzorg, Java] for the Year 1932].** [BUBBERMANN, C.]—*Jaarverslag Burg. Veeartsenijk. Dienst over 1932.* pp. 67-102. Batavia: Landsdrukkerij. [8vo].

The European staff and the general conditions of work remained unchanged from the previous year.

DEPARTMENT FOR GENERAL DIAGNOSIS.—The results are given in tabular form. Of special interest is a short account of the poisoning of seven buffaloes by cassava tops which, on analysis, were found to contain 39 mg. of prussic acid per kg. In another case, water and grass from a district where cattle exhibited osteophagia were found on examination to have a low calcium and phosphorus content.

Notes are also given on the following diseases :-" cascado," a dermatitis of verminous origin of cattle, ovine peristomatitis, bacillary osteomyelitis of buffaloes, anerobic infections of animals, *Trypanosoma theileri* in buffaloes and the treatment of surra by " naganol " and " atoxyl." [For abstracts of these papers see past issues of this *Bulletin*].

DEPARTMENT FOR SERO-DIAGNOSIS.—The methods of diagnosis for *Pfeifferella mallei* infection [glanders], bovine contagious abortion, anthrax and tuberculosis as described in previous reports continued in use: the results of the year's work are given.

A skin disease of buffaloes characterized by the presence of tubercles was examined by cultural and animal inoculation tests for evidence of tuberculosis; the results were negative. Reference is also made to an atypical strain of bovine tubercle bacillus isolated from a buffalo. [These two items may be of interest in connection with the " skin-lesion reactor " problem].

DEPARTMENT FOR THE PREPARATION OF SERA AND VACCINES.—The results of the use of various vaccines and antisera are given. An antiserum is prepared against contagious abortion: it is said to reduce the number of abortions: no vaccine is used for this disease.

ZOOLOGICAL DEPARTMENT.—The occurrence of *Trichina spiralis* in pigs, dogs and rats in Java was confirmed, and it is supposed that human beings are also infested. A long list of protozoan, arthropod and helminth parasites found in domestic and wild animals in the course of the year is given.

DEPARTMENT FOR POULTRY DISEASES.—The diagnostic returns are given. A good immunization method for " pseudovogelpest " [Newcastle disease] has not yet been discovered. The relation of this disease to fowl plague is discussed and the question is considered to be unsettled.

The report closes as usual with a list of papers published by the staff during the year.—J. E.

BOOK REVIEWS.

MILLER, W. C. [M.R.C.V.S., F.R.S.E., Examiner in Animal Husbandry for the R.C.V.S.], & ROBERTSON, E. D. S. [M.R.C.V.S., Lecturer on Animal Husbandry, Royal (Dick) Veterinary College]. (1934). **Practical Animal Husbandry.** pp. xv + 316. 122 figs. London & Edinburgh: Oliver & Boyd. [8vo] [12s. 6d.]

This book represents one more addition to the short list of books incorporating the subject matter of lecture courses delivered by a teacher in a veterinary college of Great Britain.

It will be welcomed by students for instructional purposes and by practitioners

for reference purposes. It covers in concise form the usual field of practical zootechny – the handling and management of our common domestic animals including poultry – and its value is much increased by the inclusion of numerous figures, most of which are rough line drawings which have, however, been very carefully made so that there is no room for doubt as to the exact position of the parts being depicted.—J. E.

LANGERON, M. [Chief of the Laboratory, Faculty of Medicine, Paris]. (1934). Précis de microscopie. [**Handbook on Microscopy**]. pp. xx + 1205. 365 figs., 20 tables. [Numerous refs.] [5th Edit.] Paris : Masson et Cie. [8vo] [Fr.100].

This edition, which is the fifth of this standard work on microscopy, first published in 1913, represents a complete revision of the previous edition, which was published in 1925. Some 200 pages and 49 figures have been added, together with much new information on apparatus and reagents, notably on photomicrography, micromanipulators, microspectroscopes, intra vital staining, colourimetric determinations of pH, the culture of amoebae and flagellates, coprologic technique, microchemistry and mycological technique, much of the last section being Langeron's own work.

The following are among the most notable of the several advances in technique which have been made since the last edition was published :– the use of infra-red rays in photomicrography, which holds out great possibilities for obtaining the best results with comparatively inexpensive apparatus : the use of appliances for observing and taking photographs down the microscope at one and the same time : improvements in the design of small microtomes adapted to the use of safety-razor blades [this type is thought to be replacing the heavier and more expensive instruments] : the perfecting of an apparatus for the examination of opaque objects under the higher powers of the microscope, by means of a tube of light and an annular condenser surrounding the objective, and the advance in cytological staining methods by the use of neutral red and Janus green for intra vital staining.

The work is presented in its familiar compact and convenient form and will doubtless continue to maintain its leading place among books on laboratory technique.—E. L. TAYLOR.

FEARON, W. R. [M.A., Sc.D., M.B., F.I.C., Fellow of Trinity College, Dublin, Member of Royal Irish Academy]. (1934). **An Introduction to Biochemistry.** pp. x + 313. 59 tables. [Numerous refs.] London : William Heinemann (Medical Books) Ltd. [8vo] [10s. 6d.]

The number of introductory text-books on biochemistry is already considerable, but for a volume of its size the present work is a useful addition. Of particular interest is the approach " along the less worn path of inorganic biochemistry " and the first three chapters are devoted to this aspect. The remaining 16 chapters proceed along more usual lines, the standpoint being chemical rather than physiological although the biological significance of the various compounds and reactions is adequately indicated. Certain regions of tissue chemistry have been purposely avoided as beyond the scope of the venture.

The information is up-to-date and at the end of each section there is a useful list of monographs and documented review articles to guide the reader in search of more detailed discussion of any particular topic.—H. H. GREEN.